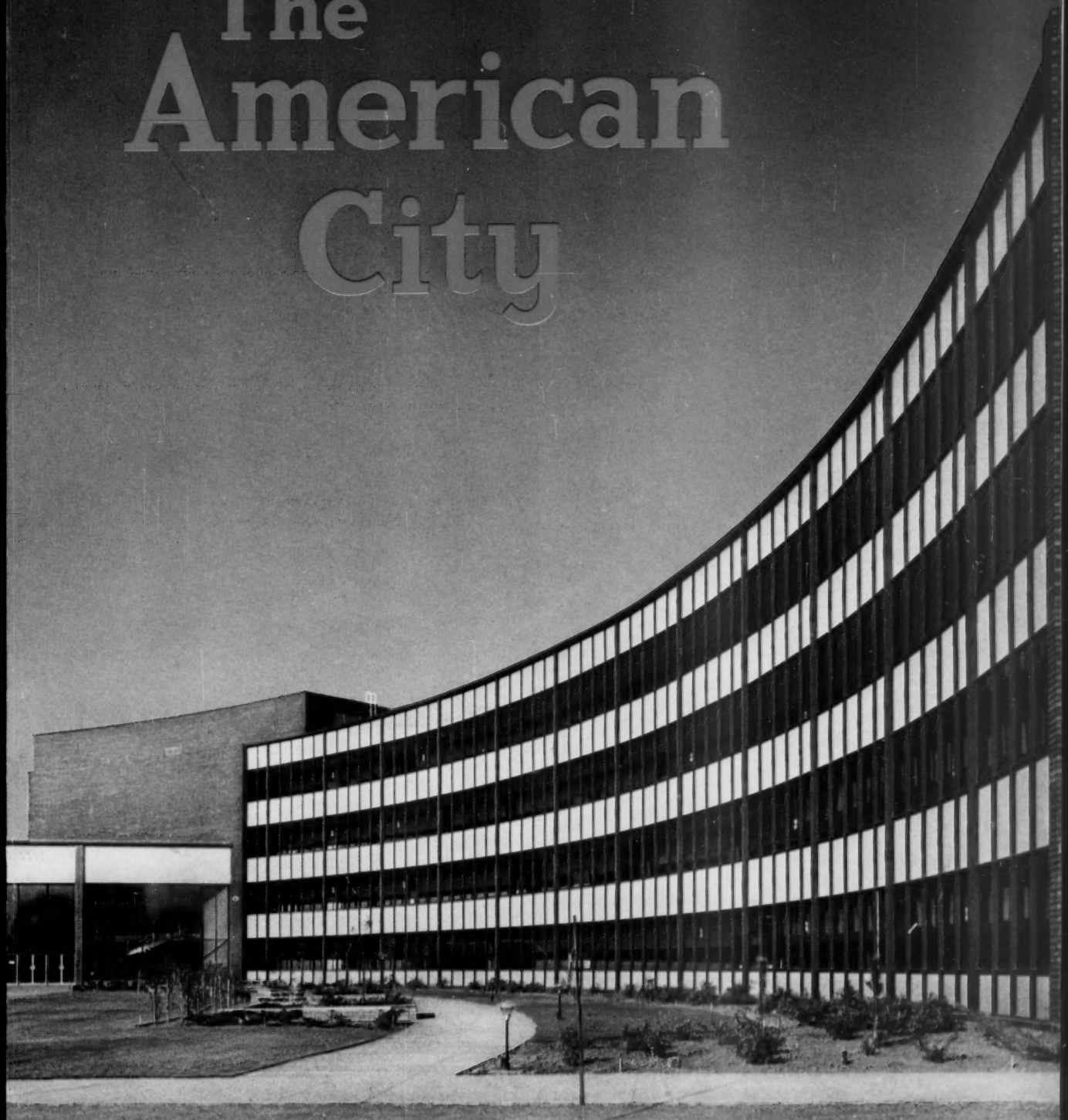
APRIL 1960

The American City



San Jose, Calif., municipal building,
a symbol of civic progress;
see pages 3 and 87

This durable, resilient pavement of plant-mix Texaco Asphaltic Concrete requires no expansion joints or curing period.

Why it pays to pave with asphalt

From New York City and Philadelphia down to communities of a few thousand population, the pavement most frequently constructed on city streets is Asphalt. Here, briefly, are some of the reasons for this preference.

Durability—Asphalt absorbs the impact of the heaviest industrial traffic year after year with a minimum of upkeep. This is being demonstrated under the 127,000 vehicle a day traffic of the New Jersey Turnpike.

Cost—When competitive bids have been received on Asphalt and other paving of comparable design, Asphalt has cost substantially less.

Riding quality—Because Asphalt is resilient and requires no expansion joints, it is unequalled for driving ease and comfort.

Speed of construction—Asphalt is speedily laid by modern paving machines and it requires no curing period. Motorists, as well as residents and business along the street, are subjected to a minimum of delay and inconvenience.

If you would like assistance with a paving problem, our 55 years of Asphalt experience is at your service. Write to the nearest of our offices listed below.

Helpful Asphalt Brochure

We shall be glad to send interested city officials two illustrated brochures which describe methods and materials recommended for heavy-duty, intermediate and low-cost types of Asphalt construction for streets, airports and parking areas.

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The American City

APRIL 1960

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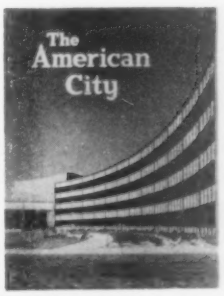

Cover Picture

The San Jose, Calif., municipal building is one of the nation's finest examples of the change not only in the architecture of these buildings but also in the public's thinking of them. A short half-century ago, we conceived of a city hall as an austere, authoritative, fortress-like structure, forbidding in appearance. Today we ask it to exemplify alertness and confidence, the essence of democratic efficiency.

The illustration came to us through the courtesy of U. S. Steel, suppliers of the structural steel that went into this building. The story appears on page 87

Profit: the Key to Telephone Progress and Low Cost

Maybe it's about time somebody stood up and said a good word about profits.

For the opportunity to earn a satisfactory profit is part of the very spirit of a free America. It is one of the basic things that have made this a great country.

Today, more than ever, the progress and prosperity of communities, states and nation are dependent on the number and the prosperity of their companies.

So the profit motive is important. Actually it is one of the great driving forces that stimulate inventions, new products, new services and new plants. And more and better jobs!

That is just as true of the telephone business as any other . . . and of added importance because of the vital nature of the service.

It is a satisfactory profit—and the hope of its continuance—that gives us the money and the incentive to go ahead on a long-pull basis instead of in a more expensive short-term manner.

It is profit that enables us to originate and take advantage of all the technological advances that improve your service and hold down the cost of providing it.

We can act instead of hesitating to act. We can go forward instead of standing still. We can move from one achievement to another in the best interest of everybody.

The evidence is overwhelming that companies that show excellent profit records do the best job for their customers and employees and, as corporate citizens, contribute the most to the community.

The day-by-day benefits for telephone users are better service at a lower price than would be possible in any other way.

WINGS FOR WORDS. It's so easy to take the telephone for granted! But what in the world would you ever do without it? All the many tasks of the day would be harder. You'd miss its priceless help and comfort in emergencies. So much would go out of your life if you couldn't reach out your hand and talk to friends and those you love.

BELL TELEPHONE SYSTEM

Volume 75 Number 4

The American City

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ASSOCIATED PUBLICATIONS

Contractors and Engineers		OVERVIEW
Municipal Index	MART	AMERICAN SCHOOL AND UNIVERSITY

LETTERS TO THE EDITOR

Federal Department of Urban Affairs

for . . .

Your editorial was most interesting and informative ("A 'Department of Urbiculture' Is Not Enough," March 1960, Page 7). A Department of Urban Affairs must have definite and specific reasons for existence. At the same time, it by no means is the whole answer to urban difficulties.

Nevertheless, let us not underestimate the value of such an agency. Its chief initial benefit would be to enhance the status of local governments in this country, and provide them representation at the highest level of policy making in the national government. When both the Department of Agriculture and the Department of Labor were established, the federal government had comparatively few functions in these fields; the chief functions of the departments were the collection of data and the representation of these particular interests in top policy-making councils. The great gains that have been made in both these fields since the departments were created have resulted in considerable part from the recognition of their status and their representation at the highest levels.

The problems of urban life are so great that all three of the chief levels of American government (national, state and local) must inevitably be concerned with them. The federal government now has a good many functions which affect the cities directly, and these functions seem very likely to grow, at the same time that state and local activities also grow.

If a Department of Urban Affairs were created at this time, its nucleus probably should be the present Housing and Home Finance Agency, which is a governmental agency of considerable dimensions already. The federal program dealing with water pollution could probaby be added without much difficulty. I have some doubt that the urban roads and airport programs could be separated from the general programs dealing with roads and airways; here, the function being performed might be more important than the constituency for whom it is performed.

In addition to these existing functions, I think it is certainly proper to begin a program of research and extension in urban problems, comparable to the beginnings of the agricultural research and extension activities many years ago. The nucleus of such research activities exists in the housing research activities presently being conducted, and in the federal programs of assistance for urban planning.

If it is not yet feasible to consider the establishment of a full-fledged Department of Urban Affairs, it might be worth considering changing the name of the present Housing and Home Finance Agency to "Housing and Urban Affairs Agency." Certainly, considerable reshaping of the urban renewal program should be made in the near future and this should probably be done by people who have the general concerns of urban growth and development at heart, rather than merely slum clearance.

A realistic function of a Department of Urban Affairs could be the administration of an urban fund program for aiding cities (by loans —not doles) in furnishing funds for needed and necessary capital-improvement programs which ordinarily could be financed at the local level through general obligation funds. Where outmoded and restrictive state statutes are strangling municipalities (and state legislators refuse to pass needed legislation or make proper constitutional amendments) complete

(Continued on page 18)

. . . and opposed

Congratulations on your fine editorial on the "Department of Urbiculture," which is certainly extremely well written and to the point.

We disagree with the wisdom of establishing such a department and I am enclosing our American County Platform containing reference to our policy on this matter. I enclose our testimony before a Congressional Committee on the matter.

With respect to the urgent need of home rule, I think that you could easily have substituted the word "county" and we could actually stand most enthusiastically behind every word you said.

BERNARD F. HILLENBRAND
Executive Director
National Association of
County Officials
Washington, D. C.

"CAN DO!" PERFORMANCE backed by "HAVE DONE" EXPERIENCE

THE MASSEY-FERGUSON 204 is the most versatile and maneuverable unit a city could own!

EQUIPPED WITH INSTANT REVERSE

The Massey-Ferguson Backhoe is the ultimate in efficiency. It has 14,000 pounds breakout power; permits unobstructed visibility; will dig flush to walls, fences, buildings. See why it is the most popular backhoe in America.

For a compact, versatile, and maneuverable utility rig there's nothing that compares with this 40-h. p. Massey-Ferguson 204 equipped with power-matched Loader and Backhoe. It has been put to the test by hundreds of public works departments and has always come through in the best "CAN DO" tradition. The 204 is equipped with Instant Reverse and Torque Converter. It saves time on every job . . . moves in and out of congested areas with ease . . . and speeds up cycle time between load and dump. Just a touch of the foot pedal and it changes direction of travel instantly and smoothly. The same pedal controls acceleration, and speeds are equal in both forward and reverse. It also features power steering, and is available with the famous Ferguson system. For loading, clean-up, backfilling, landscaping, or any of the hundreds of maintenance chores a city has to perform, it has no equal. Before you buy any industrial equipment, check into the full line available at your Massey-Ferguson Industrial dealer.

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MF60-20

The Odd Thing About City Planning—

A curious feature of city planning is how cities frequently refuse to develop in the way that thoughtful planners expect. Equally peculiar is the way rather plain, unimaginative plans, prepared for the moment, have served long, giving their cities strength and disinction.

Benjamin Franklin was a city planner who had great love for his city. He prepared his plan with thought and thoroughness, laying out his streets in squares and subsquares. Today Philadelphia could do without some of those narrow streets that Ben Franklin gave his city. Many are so troublesome that the city has to use special, small-sized refuse trucks, that the men call "alley cats," in order to get around.

New York City's early planners thought, with logic at that time, that the preponderance of traffic would be across Manhattan Island, in east-west directions. Growth at that time confirmed their conclusions, and nothing that they could see would indicate any great north-south traffic movement. So they interlaced the island with many east-west streets, and provided fewer north and south, at greater distances apart. It is no fault of theirs that the traffic pattern did not follow their forecasts.

More than a century ago, Brigham Young prepared a plan for Salt Lake City, notable today for its broad and gracious streets. He arrived at the 132-foot width by ordering Orson Pratt to hitch up eight span of oxen to a covered wagon and trailer, and see how much space he would need to turn them completely around. Long-range future needs played a disarmingly secondary role to the needs of the moment. Yet the needs of the moment, in this case, best served the needs of tomorrow.

Incidentally, Brigham Young was an old hand at city planning, by the time he staked out Salt Lake City. He had built the towns of Kirland, Ohio, Navoo, Ill., Kanesville, Iowa, and Florence, Neb., before he and his band made the long, arduous trip west.

Even earlier, a Swiss surveyor, Jean Vioget, drew up a simple, orderly plan for a settlement known as Yerba Buena, located on the shore of a magnificent West Coast harbor, backdropped by foothills and mountains. As the settlement grew, unimaginative, surveyors simply extended these lines into the steep foothills. Today that settlement, now known as San Francisco, is probably America's most interesting city, chiefly because of surveyors who had not the wit to revise a plan designed for flatlands and not hills.

Not all oddities in planning relate to physical features. All of us remember, only a few short years ago, forecasts by astute and conscientious analysts that the nation's population would never exceed 165,000,000 and would probably decrease as the nation "matured." Today, those forecasts, are so far wrong that they look ridiculous.

Today, we see pronouncements, quoted as if with the authority of the Holy Scripture and the finality of the multiplication table, that the nation will grow to a population of 312,000,000 or some similar figure, by the year 2000.

These forecasts make serious planners uneasy. Any estimate of population growth must say in plain print, "*If the present trend continues—*" and then should go on to point out that the trend rarely does. This nation's rate of growth has climbed in the past 15 years and could continue—or it could decrease. As a matter of fact, Chicago University's Dr. Philip Hauser, one of the nation's most careful demographers, has said bluntly that anyone who claims to tell you precisely what the population of America will be in the year 2000 is either a fool or a charlatan.

These oddities should strengthen our need for planning, rather than weaken it. Although the plans for New York and Philadelphia did not develop as anticipated, both cities would have been in hopeless shape without any plan. Salt Lake City's plan for the moment proved its blessing for the future. San Francisco's plan, although ill adapted to its topography, has proved to be its crowning attraction.

Cities plan, whether they know it or not. When they build a water works, they plan for a quarter of a century. When they lay a water main, they follow a plan of sorts that reaches ahead 100 years. When they extend a street, build new parks, they set plans that will be difficult to change as long as the city exists. And cities, despite the doom-and-gloom pronouncements about them prevalent today, are extremely hardy, long-lived social units.

These oddities do, however, emphasize that a city plan cannot be a static, rigid blueprint to be followed like a contract drawing for a bridge (and even these are frequently changed). It should be a flexible, vital tool that can be adjusted to new conditions as they arise. We all know this, but we need to be reminded of it now and then.

Stretching the long arm of the law in Louisiana's capital

BATON ROUGE, LA. — Day and night, 13 Harley-Davidson Servi-Cars cover 30.2 square miles in this progressive city of 125,000.

Capital investment for all-purpose patrolling

...versatile Harley-Davidson Servi-Cars

Here's an investment that pays off by stretching both equipment and manpower dollars. Officers on Harley-Davidson Servi-Cars are busy men about towns large and small — patrolling business and residential areas . . . marking cars . . . checking meters . . . shifting from intersection to intersection for spot traffic direction. Just as important, Servi-Cars pay off in economical operation and simple maintenance.

They're crime-stoppers, too! Don't forget that "seeing is behaving." The Servi-Car mounted officer's street-level ability to see and be seen discourages potential lawbreakers.

And Servi-Cars are kind to your officers. The smoothest riding three wheelers ever built, they offer cushion comfort . . . reduce rider fatigue. See the new Servi-Car at your dealer. Or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin for informative new folder.

HARLEY-DAVIDSON

Police Motorcycles

Businessmen Underwrite Lie Detector

Sgt. Lester H. Leifheidt and the author discuss a Keeler Polygraph chart in the specially constructed and equipped interrogation room.

Aurora, Ill., needed a polygraph lie detector faster than the city budget could move. Smaller cities adjoining large metropolitan areas have special problems, such as more transients being involved in both major and minor crimes. Result: a large number of suspects. A Keeler Polygraph would answer the questions.

Businessmen from Aurora and surrounding Fox River Valley cities were told of the value to the police of this device. I suggested that a fund be created from voluntary contributions to purchase it.

When the Aurora Department needed to use a lie detector in the past, it was necessary to take prisoners to the crime laboratory in Chicago.

With a polygraph and trained investigator available at all times right in Aurora, it would be possible to investigate promptly crimes costly to the business community, such as theft, embezzlement and property damage.

As a result of the meeting, local businessmen contributed $2,146, sufficient to buy all the equipment and training requested. Sergeant Lester H. Leifheidt of the Aurora Bureau of Identification attended the Keeler Polygraph Institute of Chicago. His tuition and all expenses were paid out of the polygraph fund. Sergeant Leifheidt completed the full six-week course with a 92 average.

Since part of the funds for the lie detector came from out-of-town industries, police chiefs of the Fox River Valley towns may bring suspects to Aurora.

For maximum effectiveness, an interrogation room was built and equipped with special furniture developed by Associated Research, Inc., 3758 W. Belmont, Chicago, Ill., builders of the Keeler Polygraph. This furniture included a desk for the interrogator with the polygraph mounted flush with the top of the desk, permitting the simultaneous observation of the suspect and the three recording pens.

DONALD F. CURRAN
Chief of Police

Dogs on Park Patrol in Philadelphia

Philadelphia's Fairmount Park police have eight German shepherds and a Rottweiler working with nine policemen, one dog with each man. Their training will be extended until there are two, or even three, masters for each dog.

The dogs started on duty on Memorial Day and it is said that this year the Fairmount Park crime and arrest rate fell to close to nothing because of their presence. The dogs prevented pocket picking, robberies, and drunken brawling. Assignments were as follows:

Two dogs assigned to patrol with officer near pool;
Two in the upper wooded area near creek;
Two in crowded, congested League Island park area where there is much baseball, tennis, quoits, picnics;
Two in similarly crowded Pennypack Park.

Park Police Superintendent Francis C. Deegan is expected to ask for eight more and he wants dogs to ride in patrol cars on platforms—ready to spring out.

All park officers like the idea of dogs in park duty—companions for officers on the midnight-to-8-a.m. City Police Commissioner Thomas J. Gibbons sees some disadvantages in city police work. Gibbons said that though the dogs were extremely effective on wartime patrol work, "the matter would have to be given careful consideration before being put into operation under city conditions." He added that the program would serve a useful purpose in outlying districts.

Design Malls for Fire Fighting

Downtown shopping mall designers had better be giving attention to providing an area within the mall for the placement of fire-fighting equipment and the many special types of apparatus to fight a serious fire.

B. Richter Townsend, executive director of the International Association of Fire Chiefs, asks where and how will this apparatus be brought into the mall when streets are replaced with gardens, playgrounds and sidewalks? Will the sidewalks support the 15 or more tons of the larger trucks?

One serious fire on the mall might wipe out all the monetary benefits accrued. What would be the tax loss to a community when such a fire occurred?

RIVER OAKS CUTS COSTS WITH IDEAL CAT TEAM 20%

Cat No. 955 Traxcavator with No. 6 Ripper rips rocky material, then loads excess in trucks.

Cat No. 112 Motor Grader ditches, cuts street to grade and levels up before resurfacing.

These two Caterpillar-built machines are on the job twelve months a year for the City of River Oaks, Fort Worth, Texas. The population numbers 10,000. Here's what Public Works Director W. F. Harrison says about their performance: "Over a period of years Caterpillar equipment has proved itself to have low operating and maintenance costs. The No. 112 and No. 955 are ideal machines for a city this size. By doing our own work with them, we not only can pick a convenient time and place to work, but also estimate a 20% saving on all jobs."

For communities the same size or somewhat larger, this suggests a money-saving use of the pair. The 75 HP No. 112 is big enough to do a good road job, yet is easy to move and maneuvers well in tight places. The 70 HP No. 955 has the capacity to handle tough material, maneuvers well in close quarters, too, and is available with quick-change attachments that multiply its usefulness.

Ask your Caterpillar Dealer for full details of the No. 112 and No. 955. Ask him for *proof*, too, of low operating and maintenance costs. He has *facts* and figures that show how their low final costs make them the most economical equipment your tax dollars can buy!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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BUY LOW TOTAL COST —BUY CATERPILLAR

Traffic Considered With Street Construction Work

Traffic moves past a maintenance project under the watchful eye of a police officer. The brief shower did not halt the work.

Motorists in Syracuse, N. Y., need not drive several miles to go just a couple of blocks because of street reconstruction and maintenance work. The year 1959 saw the complete repaving of unusually busy South State Street for four blocks close to City Hall and the new State Office Building plus reconstruction and extensive maintenance at 25 other locations—all with a minimum of traffic interruption.

Plans to expedite traffic movement are developed by the engineering, traffic, and police departments prior to letting of contracts or during the planning stage if the city does the work. This gives the departments concerned an overall view of the situation and eliminates the need for sudden changes that often cause serious traffic disruptions.

Reconstructing the four blocks of South State Street required careful planning because of the heavy traffic in the congested downtown area. At least one, and usually two intersecting streets were kept open at all times to permit free traffic movement. The job required new curb and gutter, replacement of the concrete base and a surface course. Although this was a contract project, the same attention to free traffic movement is given to work done by the Public Works Department of the city.

The 25 projects completed by the department's own forces involved a total of 200,000 square yards of surfacing, placed at a cost of about $1.50 per square yard under the direction of Charles J. McPhail, Commissioner of Public Works.

City Engineer Potter W. Kelly directs all engineering work let out on bids.

Napa Planes Away the Bumps — and Saves

Napa, Calif., has been reclaiming its old, bumpy asphalt streets by planing out the irregularities before applying a new wearing surface.

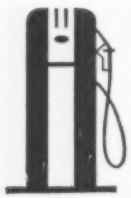
Carl F. Lynch, Director of Public Works, has been using a 19-ton Spears-Wells heater-planer as the first step in resurfacing his older residential streets. This machine can "iron out" approximately 1,000 feet of street, 40 feet wide, in a single working day. And in doing so, it eliminates the need for leveling course that the work would customarily require. All that is needed in addition is a one-inch asphaltic-concrete hot mix, placed with a Barber-Greene paver, and rolled.

Mr. Lynch calculates the total cost of such improvements at 50 cents a square foot, or $2 per lineal foot of 40-foot street. If he were to rebuild the street in the conventional way, by removing the old sub-base and laying six inches of rock, plant mix, etc., his costs would be somewhat in the vicinity of $13 per lineal foot.

A heater-planer wipes out the irregularities in a Napa street, before the application of a new wearing surface.

ANNOUNCING THE NEW

up to 30 mpg!



Totally new for *total* savings! Ford's new Falcon Ranchero delivers up to 30 miles on a gallon, yet its new 90-hp Six is geared to do a real job! There are lower costs for oil, tires, brakes, parts . . . nearly everything!

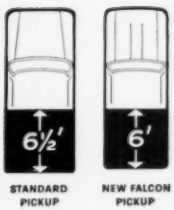
lowest priced* pickup!

The Falcon Ranchero is priced from $89 to $210 under competitive ½-ton pickups!* And that's just the start of your savings. Single-Unit construction saves on maintenance . . . it's tighter, quieter, with main underbody members zinc-coated against rust and corrosion. See your Ford dealer!

*Based on latest available manufacturers' suggested retail delivered prices with comparable standard equipment.

FORD Falcon RANCHERO

big 6-foot box!



Load capacity is more than ample for most pickup hauls—nearly 7½ feet of load length with tailgate flat. And thanks to the low loading height, loading and unloading is faster, easier!

- Up to 30 miles on a single gallon of gas
- Up to 4000 miles between oil changes
- Diamond Lustre finish needs no waxing
- Low loading height
- Instant-lock tailgate opens, closes with a single, one-hand motion
- Roomy comfort for three passengers
- Styled to capture admiration

FORD TRUCKS COST LESS

LESS TO BUY... LESS TO RUN... BUILT TO LAST LONGER, TOO!

Dade County Gets New Trash Collector

New Rig Speeds Trash Pickup

Some surprised Dade home owners have seen the first harbinger of Dade's long awaited trash removal program.

A giant mobile crane of the type Metro plans to use is on a working demonstration tour in the county.

"I never saw people so happy in my life as when they saw it go down the street picking up trash piles," said Harris N. Buckner. Metro Waste Division chief.

The unit, which consists of a crane and self-packing trailer, was designed at the suggestion of Metro officials and is the only one of its kind in the country.

NEEDS TWO MEN

"This piece of equipment can cover a route in a third of the time required by hand labor," Buckner says happily.

"It requires only a driver, who doubles as crane operator, and one laborer to clean up. The crane can remove as much rubbish in one bite as a laborer in 20 or 30 minutes."

In addition, Buckner said, a shuttle system would be used so that when one trailer was filled another trailer would take its place behind the crane.

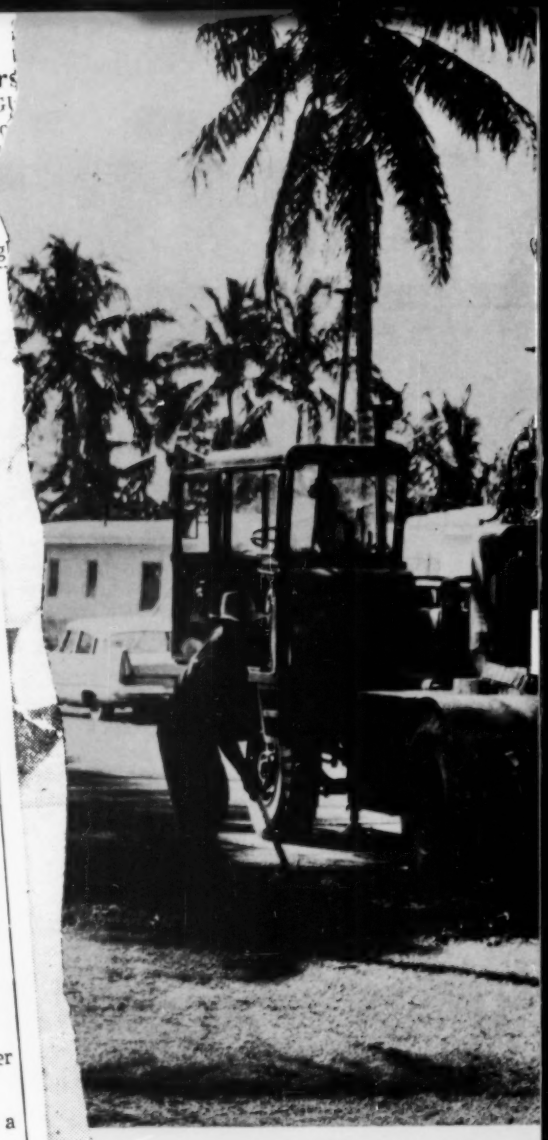
Buckner is pushing for Metro to okay the purchase of four cranes and eight trailers as a start on the trash pickup program.

COSTS $30,000

A single complete unit is worth about $30,000 and the extra trailer would add to this cost.

Buckner anticipates that the units, when and if purchased, would be split between north and south ends of the county in areas yet to be chosen. The $6 a year trash pickup fee would apply as soon as pickup begins in a given area, he said.

Blue Angel Flier



. . . the

"'I never saw people so happy in my life as when they saw it go down the street picking up trash piles,' said Harris N. Buckner, Metro Waste Division Chief."

HOBBS HYD-PAK TRAILER!

A refuse collection unit like this is big news in Miami, Florida, or anywhere else. It's a trailer specially designed by the HYD-PAK division of Hobbs Trailers and now available to municipalities and private contractors across the nation.

It can handle all types of refuse, from garbage to tree trimmings to apple boxes. Its hydraulic packer blade can compress 11 tons of refuse into the 35-yard storage compartment.

Where the pickup runs are long, where the routes have a high density of refuse, where the dump-sites are far away — this is the place for the HOBBS HYD-PAK trailer. Built by trailer people with years of experience, this unit may well be the answer to your modern-day refuse disposal problems. Write for full information today.

"It requires only a driver, who doubles as a crane operator, and one laborer to clean up. The crane can remove as much rubbish in one bite as a laborer in 20 or 30 minutes."

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PIPE THAT DOESN'T GET COLD FEET IN WET TRENCHES

This cast iron pipe was installed to carry water to an important industrial site in Indiana.

At the time of installation, weather conditions were severe; the trenches were wet and muddy.

Still, the cast iron pipe was easily and speedily assembled, enabling the contractor to complete the job well ahead of the deadline.

Cast iron pipe does not get cold feet over rugged soil conditions. Its rugged design, corrosion-resistant qualities, and bottle-tight joints will withstand the most severe pressures.

Modern, cement-lined cast iron pipe will deliver a continued full flow of water for at least a century . . . and rarely requires repairs or replacement.

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Thos. F. Wolfe, Managing Director,
3440 Prudential Plaza, Chicago 1, Illinois

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PERMA-LINE is quick, easy and economical to apply—and doubly welcome in your plan of traffic striping because you can stretch today's maintenance budget so much further

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NAME _____ TITLE _____
ADDRESS _____
CITY _____ STATE _____

(Continued from page 5)

deterioration of our cities will result unless assistance is afforded at the national level. Most cities such as Bloomington have the resources, the ability, and the desire to progress, but we are step-children of the state legislature and do not have the legal permission to do for ourselves those things that we are capable of doing at the local level. We have the means to repay such loans but no authority.

You are certainly correct in saying that a federal agency would hardly be able to require the states to give the cities proper apportionment and proper financial resources, although continued research and study with regard to these problems might be of some help. The cities will have to continue to fight their battles at the state level.

THOMAS L. LEMON, *Mayor*
Bloomington, Ind.

Playground Equipment

It is gratifying to know how well the story on playground equipment is being received ("Some Unusual Inexpensive Playground Equipment," February 1960, p. 99). Looks as though I'd better have shop drawings made and a quantity of prints prepared for interested readers; this service is always appreciated and we feel that cooperation from other cities can thus be reciprocated.

JACOB GERLING
Supt. of Park Maintenance
Rochester, N. Y.

Water Rates Series

We recently have had occasion to refer to your "Modern Water Rates" series and find that we are lacking the April and May issues of the magazine.

Since we plan to remove and file these articles for easy reference, we are wondering if you could send us the complete cut sheets to date. We could cut up our issues but would rather not, if the reprints of the articles are available. If not, can you give us the two missing installments?

Your magazine is one of the most valuable coming into this office.

J. H. GREENHILL
J. H. Greenhill and Assoc.
Consulting Engineers
Miami, Fla.

EDITOR'S NOTE: The entire series is being reprinted and will be available in booklet form shortly.

NEW!

Now, a loader and backhoe worthy of the Fordson Power Major Diesel

We'll match the performance, price, productivity, fuel economy, ease of servicing and overall dependability of this new Fordson Power Major package against any similar tractor-loader-backhoe on today's industrial market.

Granted, there's little gamble in this challenge. Fordson diesels long ago won their vote of confidence from tractor users all over the world. The new Ford 2500 lb. Super-Duty loader and Ford 14′ backhoe are basically the same heavy duty units engineered for the Ford Industrial tractor — equipment which has been proved while handling some of the toughest industrial jobs to be found anywhere. Phone your Ford Tractor and Equipment Dealer for a demonstration!

Ford Motor Company

NEW!

Fordson's power, weight and economy teamed with Ford's top producing loader and digger

The Fordson Power Major is the newest, most powerful version of the world's first mass-produced tractor . . . traces its origin back to the first Fordson of 1917. During those many years of improvements, Fordson has become a buyword for steady, dependable tractor power and unmatched fuel economy—a gallon an hour or less under full load, according to many owners. Now, for the first time, you can buy a tractor-matched, Fordson-size loader and backhoe. And what a production team it makes!

The loader has 2500 lbs. rated lift capacity, 5500 lbs. breakaway capacity, 22-degree bucket rollback, 3″ below-grade digging and ⅝ to 1 cu. yd. tread width buckets. The same type rugged subframe and hydraulic system mounts and powers Ford 12′ or 14′ backhoes. The largest of these, shown above, is in a class by itself and has no competition except for big, specialized rigs. Why not phone your Ford Tractor and Equipment Dealer right now for detailed specifications?

TRACTORS AND EQUIPMENT FOR 101 INDUSTRIAL JOBS

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MV-141

- Streamlined Design
- Rugged—Light in Weight
- With or Without Photo Control
- Small Profile—Low Wind Resistance
- Distinctive Housing—Hydraulically Pressed

For Details ask for Bulletin J 2-116

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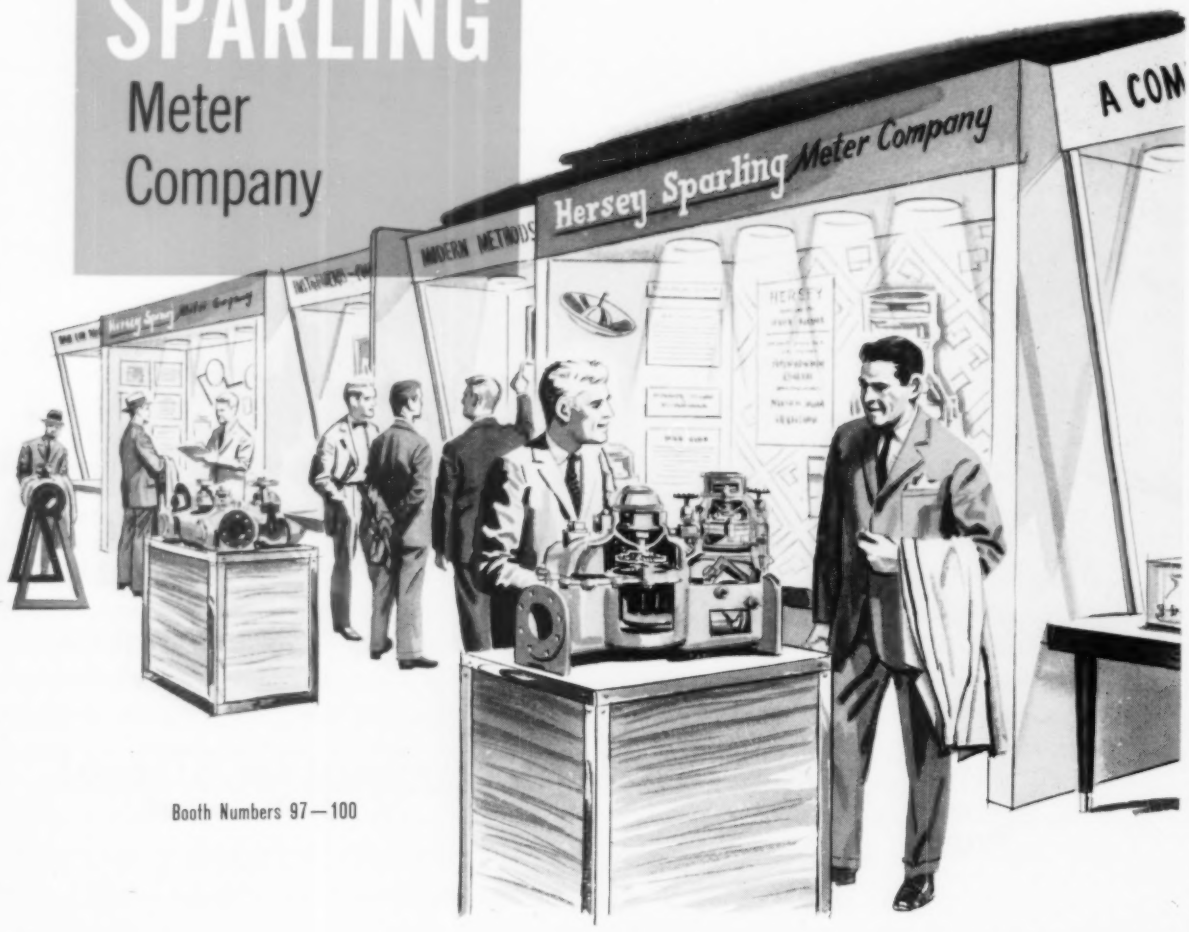
HERSEY-SPARLING Meter Company

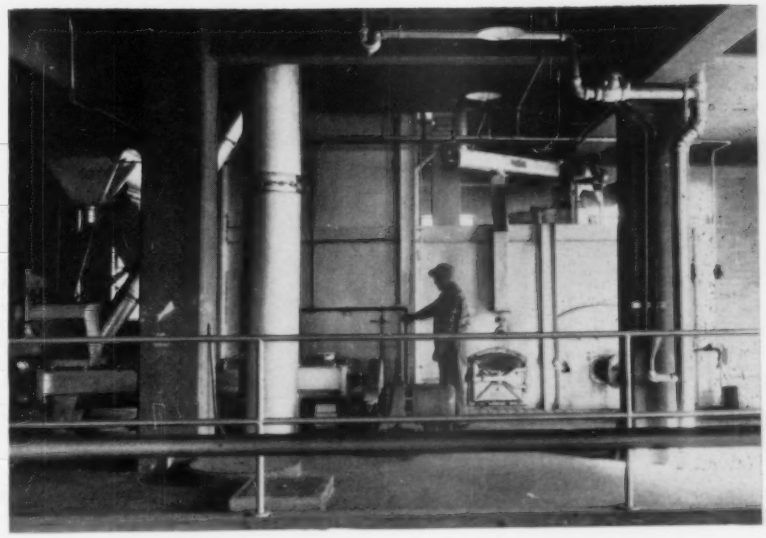
We look forward to welcoming you at our first Convention appearance since the Hersey Manufacturing Company and the Sparling Meter Company joined together "under one banner".

At the Hersey-Sparling booth we can give you full details on the world's most complete line of water measuring and control equipment for Municipal, Industrial and Irrigation Service. We will be glad to see you.

Hersey-Sparling Meter Company; Hersey Products: Dedham, Mass.; Sparling Products: El Monte, California; Branch offices in all principal cities.



Booth Numbers 97—100



This compact sludge incinerator provides disposal facilities without upsetting favorable land-use trends.

The Uncalculated Cost of Sludge Disposal

Superficially, the New Rochelle, New York, sewage purification plant is spending more money to get rid of its sludge than will the plant that will serve its cross-county neighbor, Yonkers, upon completion. The difference is in the method of disposal. The Yonkers plant will barge its digested sludge to sea for disposal. The New Rochelle plant dehydrates its sludge on a vacuum filter and incinerates it. The offhand cost difference runs between $30,000 and $60,000 a year favoring the Yonkers operation.

These costs, however, do not include the blighting effect that barging could have on the New Rochelle area. This is a municipality of neat, attractive, well-kept homes, and its shore area has an active, popular small-boat recreational center. The use of awkward and generally unattractive wharfs and bulky barges would damage these residential areas and destroy much of the usefulness of the marinas. When the costs involved in the loss of value to the residential areas and the recreational facilities would be calculated, they would offset the cost difference, mentioned previously, by a wide margin. The probabilities are strong that New Rochelle would have objected so vigorously to a bargain operation that it would have been ruled out immediately.

Nevertheless, a comparison between the two methods has interest. The New Rochelle plant dehydrates its sludge on a Komline-Sanderson coil-spring vacuum filter and incinerates it in a C. E. Raymond flash dryer. It is a neat, compact, unobtrusive operation that produces an end product that is nuisance-free, small in volume, and easily disposed of. Yonkers, in contrast, already has a large area devoted to commercial wharfs, so the barging operation does not conflict with present land uses.

If the New Rochelle plant were expanded to its full capacity, it would dispose of its sludge at a cost of about $36 per ton of dry solids. Currently we have reserve capacity for future growth of the area. Since the equipment was deliberately selected large enough for the future, present costs are substantially higher.

A comparison of both plants on the basis of ultimate design operation would yield the following figures:

	New Rochelle	*Yonkers*
Dry solids, tons per year	3,000	8,850
Capital cost per ton of dry solids	$13	
Operating cost—per ton of dry solids		$3
Vacuum filtration	$13	
Incineration	$10	
Barge		$5
Towing		$8
Total cost	$36	$16

Both plants are part of the sewer districts operated by Westchester County.

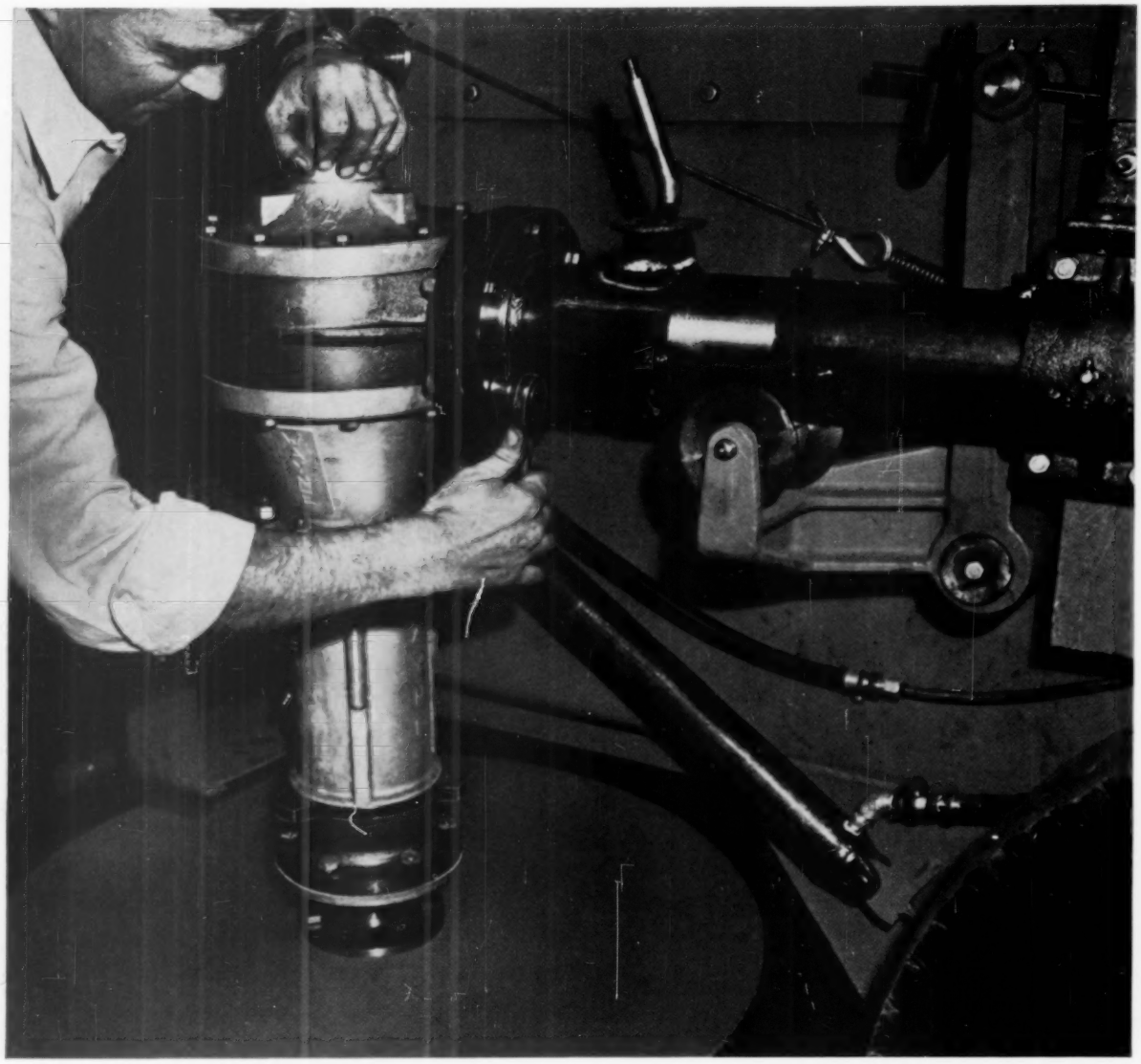
GUY E. GRIFFIN
Deputy Commissioner of Public Works
Westchester County, New York

British Health Officer Doubts Swim Risk In Polluted Sea Water

The presence of sewage pollution in sea water appears to be an esthetic rather than a health problem, according to Dr. B. Moore, chief of Public Health Laboratory, Exeter, Devon, England.

The lay public tends to blame sewage-polluted sea water for any intestinal illness contracted at seaside resorts, explains Dr. Moore. He has traced an outbreak of paratyphoid fever to ice cream and an outbreak of gastro-enteritis to non-bacterial causes.

Dr. Moore said that evidence of typhoid or paratyphoid fever that can be traced to bathing in grossly polluted sea water is very uncommon. He also found no connection between swimming in polluted water and cases of poliomyelitis. He presented these findings at the recent international conference on waste disposal in a marine environment held at the University of California, Berkeley.



Wayne Quality is Always in the Sweeper!

Wayne manufactures no "price" sweepers. The same basic engineering and construction features...the same high quality parts...all backed by improvements made through years in the sweeper field...are in *every* Wayne Sweeper without exception. No reduction in quality, no corner-cutting, have ever gone into Wayne Sweeper production to meet a "price".

Regardless of the size or type of Wayne Street Sweeper you buy for your city, there is simply no compromise with quality available from us. You buy only the finest sweeper built, receive only the longest, trouble-free performance, and get the ultimate in pennies-per-mile cleaning—when you buy *Wayne!*
Send for the facts—today!

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Look at the Ways Wayne Can work for your City!

Dirt and dust don't stop at the curb—they can mar the good looks of your city in a dozen public places!

But wherever debris accumulates, there's a Wayne Power Sweeper with the right capacity, designed and engineered to dig it out *fast*—to do the most economical and efficient sweeping job your city can enjoy.

Find out how you can save manpower...save time...and get municipal housekeeping done *better*, for less. *Write for the Wayne Power Sweeper Brochure—yours for the asking!*

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Granular Bed Best For Clay Pipe

Savings in labor, time and money have resulted in wide engineer-contractor acceptance of compacted granular bedding for clay pipe installation during the past five years.

During that period, the Clay Sewer Pipe Association, Columbus, Ohio, has carried on an extensive research and testing program, and its Clay Pipe (Technical Edition) describes some of the results and specification recommendations.

Common specifications still call for stopping all machine trenching four inches above the grade line of the pipe and making the final preparation of the trench by hand. But hand labor becomes increasingly expensive and constant inspection is difficult. Overdigging and subsequent filling to grade line with granular material in over-dug areas results in additional costs.

To overcome these bedding problems, many engineers now specify that the trench be excavated four or more inches deeper than final grade line, and that it be back filled with a compacted sand, stone or gravel to pipe-laying grade. The standard practice:

1. **Eliminates careless overdigging**
2. **Eliminates hand shaping to fit pipe barrel**
3. **Reduces need for constant inspection**
4. **Achieves greater pipe-supporting strengths**
5. **Reduces costs**

Contractors who have had a chance to compare costs between the two methods usually turn to the stone backfill method because it is faster, easier and cheaper.

The five-year study has resulted in the following recommendations by the Clay Sewer Pipe Association:

1. The granular bed should be at least one fourth the pipe diameter but not less than four inches thick.

2. Granular material should not be larger than ¾ inch in diameter. Aggregates of more than 1-inch diameter are not recommended because:

- **a. point loading in dry trenches will create uneven bearing and possible damage to pipe by sharp or over-size aggregate**
- **b. large void spaces might allow migration of subsoil up through the granular bed**
- **c. adequate bell impressions are not readily formed in the larger-size bed material.**

3. Native clay, or other fine material should be supported by bulkheading where conditions of lateral ground-water seepage exist, or where the trench is below the ground-water table. This recommendation is designed to eliminate possible displacement of granular or small-size bedding material by natural down-grade flow in the trench.

The Association cautions that granular bedding recommendations should not be considered a "cure-all" that would eliminate standard procedures as listed in ASTM C12-58T, "Installing Clay Sewer Pipe." To obtain load-factor values specified for tamped backfill, compacted granular bedding with tamped backfill or first class bedding, all standard procedures—plus the recommended extra steps—must be observed.

There's plenty of pleasure being generated at Forest Park's municipal ice-skating rink.

This Ice-Skating Rink Earns Its Own Way

Forest Park, Ill. has a municipally owned ice-skating rink that is placing no burden at all on the village tax fund.

A voter-approved bond issue made the rink possible. It has been in operation since December 1958. Experience to date shows that the moderate fees paid by skaters, plus income from concessions, will retire the bond issue within a few years, in addition to covering all operating expenses.

Built at a cost of approximately $150,000, the rink includes an ice surface 85 by 185 feet, as well as an attractive "warming house" 51 by 64 feet. Designed by Ahrendt Engineering Co., Chicago, Ill., the rink was built by the Burge Ice Machine Company. It includes more than nine miles of National Supply "SpanGrid" steel pipe. Most of the pipe is of one-inch diameter and is laid on four-inch centers and welded to form the refrigerating grid.

The rink incorporates the patented Heinzelman Uniflo System, which permits the utilization of the headers as part of the refrigerating pipe, with no need to dig trenches, install valves, or purchase purging apparatus. Brine flows first to the center of the rink, which normally gets the most sun, and flows last along the sides. The brine flow can be reversed as the sun takes a different position.

The rink was built over one end of the tennis court area in the village park. It is equipped with a 150-ton package refrigeration unit. Brine is delivered to the pipes at 10 degrees F, with a flow of 1,050 gallons per minute at 25 pounds per square inch. The brine system is totally enclosed, eliminating large, unsightly storage tanks. A 450-gpm cooling tower is located outside the warming house. Dasher boards around the rink are painted black to avoid reflecting heat downward to the ice.

The "warming house" includes a snack bar, lockers, and a skate rental counter, as well as rest rooms, providing several sources of rink income in addition to the skating fees.

Asphalt Curb Pays Off In Denver's Parks

Denver's Department of Parks and Recreation has been obtaining excellent results in using asphalt curb-laying machinery on park roads, according to David M. Abbott, Director of Parks. The asphalt curbs have been particularly useful in eliminating the encroachment of traffic and parking on grass areas. This is particularly important where sprinkler heads at road edges must be protected.

The Department uses the asphalt curb where more permanent type of concrete curbing is not desired, nor economically advantageous. Mr. Abbott finds that the asphalt curbing can be installed for perhaps a quarter of the cost of concrete curb in areas where its use is appropriate. He much prefers it to the use of telephone poles laid end to end, even when they are anchored with pipe or concrete posts.

For this work, the Department uses an Etnyre automatic asphalt curb setter. A crew of four can lay approximately 600 feet of curb per day. If the curb cannot be laid on an existing asphalt roadway, the crew places an asphalt pad ahead of the curbing.

Trim attractive curbing at low cost.

Plain talk about machine dictation:

"Our work is different... bet you don't have a dictating machine for us!"

No bet . . . with Edison there's no need to gamble with compromise dictating equipment! In Edison Voicewriter's *complete* line, there are models that are right for you, right for each particular dictation requirement in your department.

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The Voicewriter offers every convenience for the busy official or correspondent. Lets him "talk away" his work—*whenever he's ready*—just by taking the mike. The Edison Voicewriter Diamond Disc is easy to handle—easy to transcribe from.

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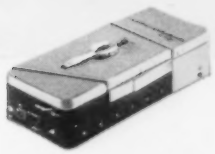
Televoice is ideal for agencies or departments where many individuals require dictating facilities. Connects each one to a central transcribing point through a handy dictating phone. Work flows steadily and smoothly, gets out faster, much more economically.



For officials on the go . . . Midgetape!

The department of streets, fire inspectors, even the board of health can use the palm-size Midgetape recorder for so many jobs! To record conversations . . . for verbal note taking during tours of inspection. Battery operated, weighs only 3 lbs.

Mail coupon today for details on the Voicewriter system to match your own special needs. No obligation, of course.

To: Edison Voicewriter, West Orange, N. J., Dept. AC-4
Okay, I'm interested! What do you think Voicewriter can do for me and my department?

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McGRAW EDISON

OUR MUNICIPAL NOTEBOOK

AUTOMATIC SPRINKLER SYSTEMS

. . . for your municipal parks? If so, Denver's Director of Parks, David M. Abbott, feels that you will save approximately 20% by using polyethylene pipe in the system, if sizes range from ¾ of an inch to 2 inches. Pipe he selects must be able to:

- *withstand 50 pounds of working pressure.*
- *withstand freezing and thawing without deterioration.*
- *endure the weight of heavy mowing equipment.*
- *resist the building of mineral deposits on the interior that would restrict flow.*

Park Director Abbott warns, however, that the use of the pipe does not eliminate the need for good drainage nor the need for placing it below the frost line if year-round service is needed. Moreover, he points out that the more rigid plastic pipe is useful also when its qualities are understood.

* * *

NEW STREET-SWEEPER BROOMS

. . . in a hurry. San Diego doesn't believe in spending 2½ to 3 hours winding a new broom for its street sweepers. L. E. McCorison, Superintendent of the Equipment Division, uses a Cor-a-matic rotary broom filler, modified slightly, to refill a broom core in 40 minutes.

* * *

BRANCH LIBRARY SITES?

Austin, Tex., urges investigation of the neighborhood shopping centers. Businessmen on the Library Commission obtained cooperation of two shopping centers that donated space.

* * *

PERFORMANCE BUDGETING?

Do you know its advantages for your city? Albuquerque, N. Mex., has found that this method, even with its admitted weaknesses, surpasses old budgeting methods without loss of basic principles. It provides control over operating costs, and shows whether these costs will stay within the budgeted figure.

The weakness is that this type of budgeting is difficult to apply to many city departments. A list of those municipal services where this type of budgeting may be applied easily and those where it might be difficult would run as follows:

Easy to apply	*Difficult to apply*
refuse collection	snow removal
water supply	fire protection
sewerage	police
street cleaning	welfare

* * *

HAVING BATTERY TROUBLE?

Police and other municipal cars run into battery trouble because of the electrical devices they have to carry. Police Chief Robert Kelley, Rocky River, Ohio, sidestepped this neatly by equipping his cars with 12-volt, 50-amp alternators.

* * *

SELL YOUR WASTE SLUDGE

. . . from water softening? Kenton, Ohio, does so and thereby eliminates an expensive, annoying disposal problem. The city's Safety-Service Director, Merle Fleming, has the sludge pumped into a 1,100-gallon tank on a Ford truck and sprayed over the farm land. The pump is a Gorman-Rupp, self-priming unit powered by a 4-cylinder, 21-hp, air-cooled engine.

* * *

POOR TELEVISION RECEPTION?

If your municipality is outside the area of good television reception, you can follow the example of Norway, Mich., and build a Community TV Antenna system. The city has installed a TV tower and about 60,000 feet of distribution cable. Using a system of filters, amplifiers, and other electronic devices supplied by Jerrold Electronics of Philadelphia, the city's system can provide clear reception from three major networks.

The city operates the service as a utility, charging $60 for each installation, and $1.50 per month service charge. The system currently has 680 customers.

If you want more information on these topics, or any other municipal problem, drop a note to:

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

REGIONAL FIRE-PROTECTION

. . . by 2-way radio? You'll find such a system in the New England area of Greenfield, Mass., serving 46 communities in Massachusetts, New Hampshire, and Vermont, and embracing 1,100 square miles. This Tri-State Mutual Aid Control Center is manned by 22 permanent officers and men who can dispatch as many as 35 pieces of apparatus to any one fire. It utilizes General Electric communications equipment.

* * *

"CURES" FOR TRAFFIC VIOLATORS

Two dozen 30x40-inch accident photographs on the walls of the municipal courtroom in Rochester, N. Y., create a sobering influence on those accused called before Judge John P. Lomenzo on traffic violations. Before the photo display, most violators tried to justify their actions. Since then, most have admitted their faults. The cases do not require jury trials.

* * *

WEIGH REFUSE TRUCKS QUICKLY?

You certainly can, virtually on the run if you wish, using electronic weighing equipment. Not only that, it will weigh and print. New York City has installed these weighing devices to upgrade its management program in the Sanitation Department.

* * *

BIG STREET SWEEPERS

. . . in little cities? Yes, lots of them. Of the approximately 4,000 street sweepers in operation today, nearly half are in cities with populations of less than 15,000 and nearly 20% are in cities of less than 5,000.

* * *

DO ONE-WAY STREETS

. . . ease traffic problems? Talk to J. H. Robinson, Traffic Director, Oklahoma City, and he'll tell you, "Yes, plenty." This city designated 26 miles of its streets for one-way traffic and noted these advantages:

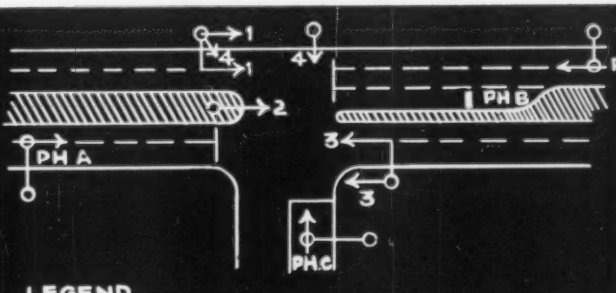
- *speeds on principal streets raised from lows of 4 to 5 mph to averages of 20 mph.*
- *distribution of traffic in the central area to a wider pattern.*
- *more conveniences and freedom to pedestrian movement.*

1826N SELECTIVE TRAFFIC SIGNAL OPERATION

Selective Signal Operation is traffic signal control that adjusts to moment-to-moment needs of the traffic itself rather than following a rigid, pre-set pattern of phase rotation and timing.

Model 1826N is a three-phase, full actuated signal controller. It provides selective signal operation by:

- giving green light only to intersection approaches that need it — skipping those momentarily clear of traffic.
- continuously dividing green light time according to the ratios of conflicting traffic flows — regardless of how widely and frequently those ratios vary.



SIGNAL NO.	PHASE-A R/W	PHASE-A CL	PHASE-B R/W	PHASE-B CL	PHASE-C R/W	PHASE-C CL
1	↑	↑①	↑	Y②	R	R
2	R	R	←	Y	R	R
3	G	Y	R	R	R	R
4	R	R	R	R	G	Y

① ↑ REPLACED BY Y WHEN PHASE B IS SKIPPED
② Y REPLACED BY ↑ WHEN PHASE C IS SKIPPED

Traffic engineers nationwide have used the 1826N to prove that congestion need not be tolerated at important intersections where traffic is handled in three separate movements.

The 1826N is applicable to a wide range of intersection types and signal problems. The illustration above is but one of many examples.

For reliable signal operation with minimum maintenance, the 1826N uses advanced circuitry, service-proved components, and highest standards of quality construction.

For details write for Bulletin C-132.

TRAFFIC ACTUATED

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES, INC., NORWALK, CONNECTICUT

CUT COLLECTION COSTS with UNMATCHED BIG SIX PERFORMANCE

Greatest operating economy starts with lowest maintenance costs and most productive time . . . and the Load-Packer 600 delivers economy proof in every one of its BIG SIX performance features.

1. **FASTEST OPERATION**—Crew starts reloading in just 4 seconds . . . full cycle takes only 10 seconds.
2. **GREATEST COMPACTION**—Direct thrust compaction packs more per yard than any competitive unit.
3. **BIGGEST LEGAL PAYLOADS**—Biggest loads on any given chassis for two reasons. First, dead weight is cut to a minimum; second, telescopic hoist eliminates heavy subframes and improves weight distribution.
4. **LARGEST LOWEST HOPPER**—Big 1½ cubic yard, 74 inch wide hopper, plus low loading height.
5. **SAFEST, MOST DEPENDABLE**—Controls are simple, foolproof. Operator has positive control. Fewer moving parts, less linkage, few adjustments.
6. **GREATEST ECONOMY**—Biggest hopper and fastest packing cycle cut fuel costs and equipment wear.

Start cutting collection costs now by having your GarWood-St.Paul truck equipment distributor tell you more about the Load-Packer 600 . . . with exclusive BIG SIX performance.

LOAD-PACKER® 600

GarWood INDUSTRIES, INC.

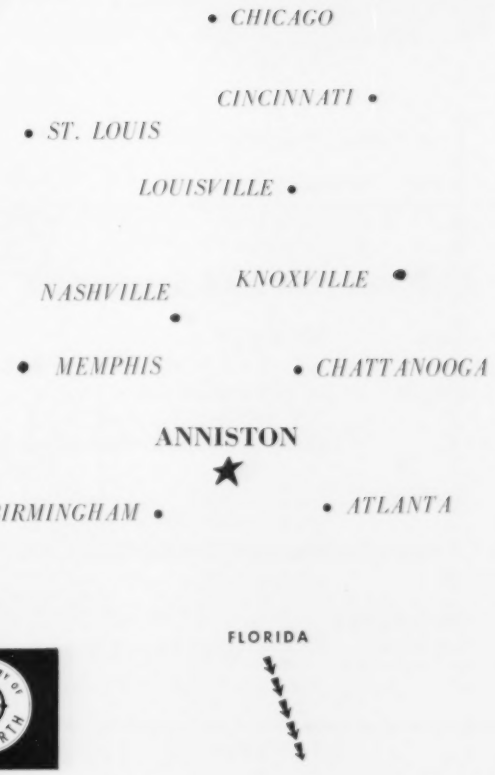
Wayne, Michigan • Richmond, California

We Invite AWWA *Delegates To*

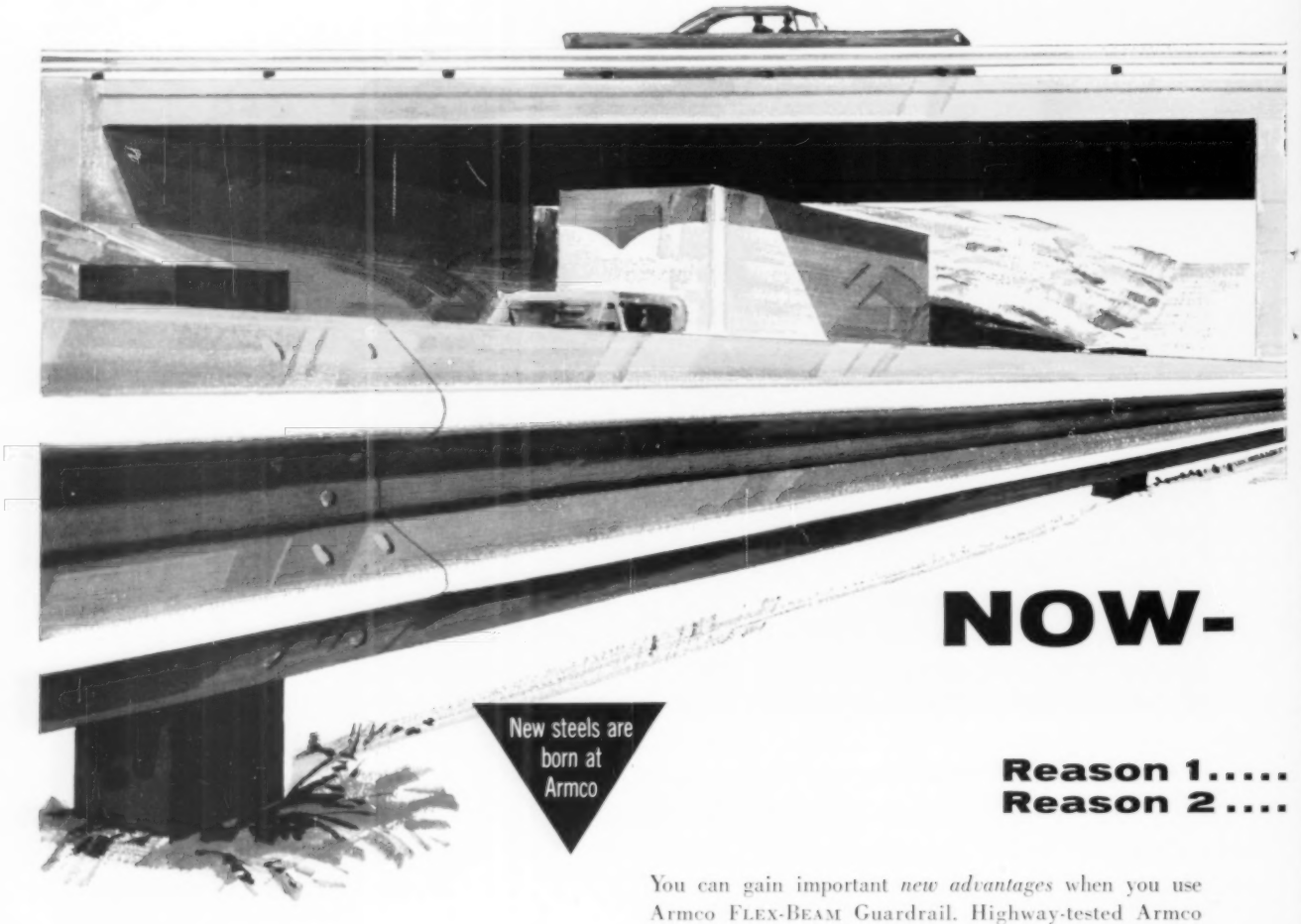
STOP by ANNISTON

On your way to or from the AWWA convention May 15-20 in Bal Harbour, Florida (Miami Beach) stop at Anniston, Alabama, and visit with us. We cordially invite you to see our enlarged manufacturing facilities, break your trip for a few hours or a day and be our guests.

You'll find it time well spent to see first hand just how the high quality of M & H products is attained in our modern plant. Either stop by unannounced, or "if you let us know you're coming we will bake a cake!"



M&H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA
SUBSIDIARY OF WALWORTH



NOW-

New steels are born at Armco

Reason 1.....
Reason 2....

You can gain important *new advantages* when you use Armco FLEX-BEAM Guardrail. Highway-tested Armco FLEX-BEAM is now available with a protective zinc coating. It is supplied in double lengths—25-foot long sections—that speed installation. These double lengths eliminate five out of every ten splices. And the number of sections that must be hauled to the job site and handled is reduced by half. Of course, the single length sections of FLEX-BEAM continue to be available.

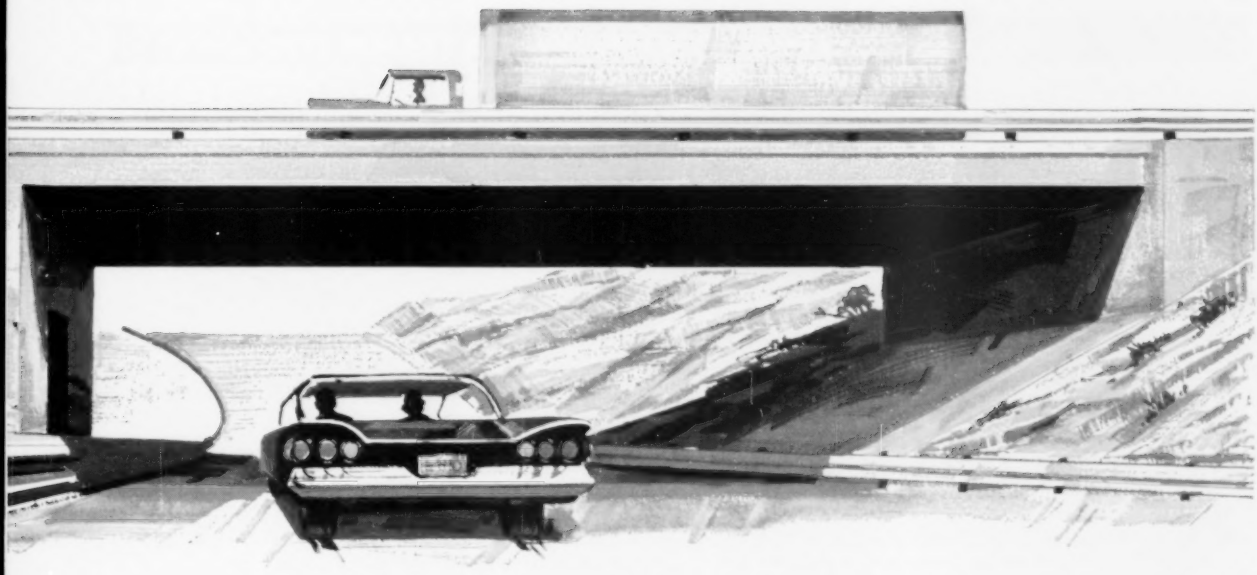
With galvanized FLEX-BEAM, the zinc coating provides surface protection for the metal—eliminating the need for painting. Or, if painting is desired for utmost visibility, it can be limited to the *face* of the rail. This is especially important for installations against walls or machinery, highway median strips, double-faced parking lot installations and similar uses where the back of the rail is inaccessible for maintenance painting. Total result is simpler, lower cost installation and maintenance.

Condensed FLEX-BEAM Specifications

Gage:	10 and 12
Length:	12′-6″ and 25′-0″ (25′ sections supplied in 12-gage, galvanized steel only).
Coating:	Shop applied, rust-inhibiting prime paint or Galvanized to meet ASTM A-93 (Class 2.5 oz. coating).
Shop-Curved Sections:	Fit any radius from 5′ to 150′.

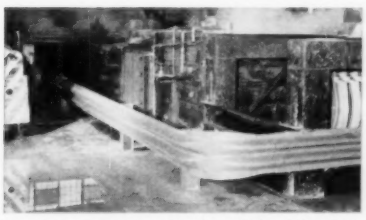
Send for free catalog

Send the coupon for the latest edition of the 12-page Armco FLEX-BEAM Guardrail catalog. Armco Drainage & Metal Products, Inc., 5880 Curtis Street, Middletown, Ohio.

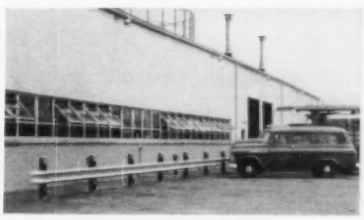


--you have Two More Reasons for selecting Armco Guardrail

DOUBLE LENGTHS to speed installation and cut costs
GALVANIZED to simplify painting and reduce maintenance



FLEX-BEAM protects valuable machinery in plant.



FLEX-BEAM adds parking lot safety.

FLEX-BEAM installation on Chicago's Calumet Skyway.

Armco Drainage & Metal Products, Inc.
Department A
5880 Curtis Street, Middletown, Ohio

Send my copy of the Armco FLEX-BEAM Guardrail Catalog

Name_____

Organization_____

Street_____

City_____ Zone_____

State_____

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

Weeklies Get First Water Cartoon

The first of a series of promotional cartoons designed to stimulate interest and action in the water and sewerage fields has been received by 2,000 weekly newspapers. The service was started by the Water and Sewage Works Manufacturers Association as a part of its recently initiated public-relations program.

The cartoons are targeted at "the worst public works problem," the failure of water and sewage facilities to keep up with demands because of public apathy. It is hoped that the cartoon program will increase public awareness of the pressing need for these facilities.

Ingenuity Solves a Water Problem

The Milton Water Corporation of Milton, Vt., saved several weeks' labor and thousands of dollars by replacing a worn-out metal pipe with a plastic line. The problem was to continue supplying water to eight homes separated from the town's only water supply by a 2,900-foot-wide lake.

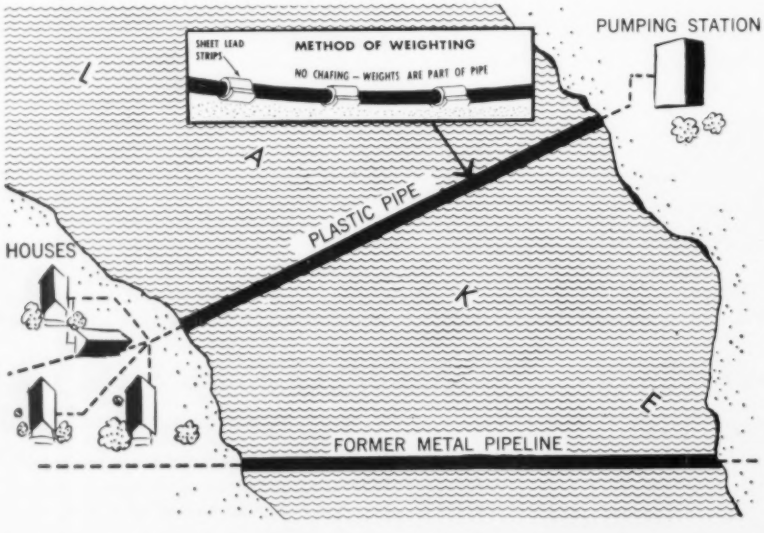
To avoid the expense of running a metal pipe either around or under the lake, Water Department Supervisor Kenneth G. Miner decided to experiment with flexible plastic pipe. The line had to hug the lake floor to avoid damage from boating and swimming in the summer, and ice (up to three feet thick) in the winter. Mr. Miner spent almost a year developing a system of weights that would hold the pipe against the lake bottom without pinching or chafing the line's exterior. These experiments showed that wire used to tie stationary weights to the pipe snagged and tended to chafe the plastic pipe as it moved back and forth with the lake currents. The final solution consisted of using three-inch-wide by ⅛-inch-thick lead sheeting strips spaced between 8 and 12 feet apart.

A crew of six installed the new 3,500-foot-long line in eight hours. Lengths of Republic Steel's 100-pound FE flexible plastic pipe were joined by metal couplings and clamps and laid along the shore in loops, ribbon-candy fashion. After plugging both ends, the line was set afloat on the water.

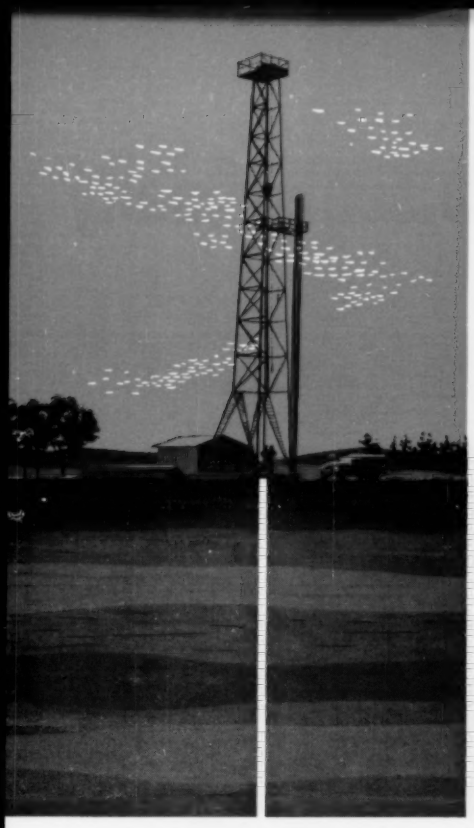
Being lightweight and airtight, the 1½-inch pipe floated on the lake surface and was easily towed into position. The men connected one end of the pipe to a feeder line and towed the other end to the opposite shore and connected it to the house service lines, already installed five feet below the ground.

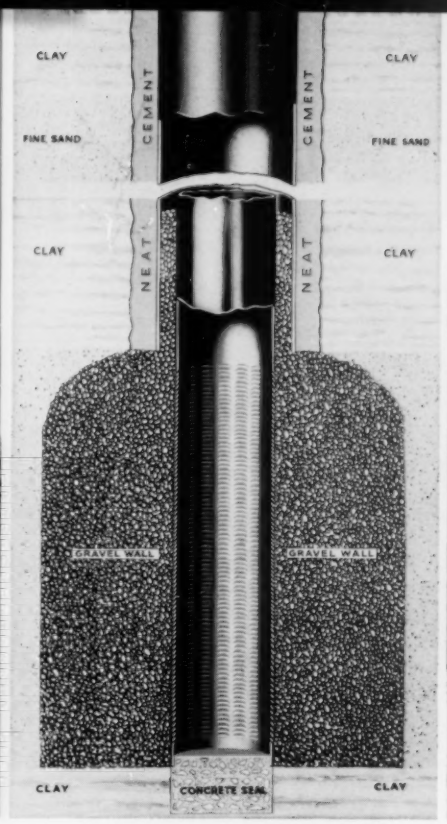
Filling the pipe with water made it sink—but only to a level just below the surface. Using a boat, the crew moved along the line wrapping the lead strips once around the pipe at the specified intervals. After eight hours the job was complete and the new line rested 40 feet below the surface, following the contour of the lake bottom. At the end of one week, the pipe had become imbedded in mud and plant life and was completely covered. The line, carrying water at 86-psi pressure, is made of polyethylene and is completely inert to the chlorinated water it conveys and will not corrode or allow formation of scale.

Besides saving days of work, use of the flexible plastic line also saved a considerable sum of money. Cost of installing a metal pipe across the lake was estimated at around $4 per foot, whereas the line installed cost only about 40 cents per foot in place.



Plastic pipe, submerged with wrap-around weights, successfully overcame a 2,900-foot obstacle between several Milton, Vt., homes and the town's water supply.





WATER WATER WATER

With A Layne Drilled Well Layne knows where the water-bearing formations are located. They have been drilling wells for over 75 years. This experience comes from searching and researching water aquifers. Knowing *where* to drill is half of the success—knowing *how* is the other half. In drilling a straight well experience counts—and you can count on Layne. Layne specializes in water well drilling. To get a good start for a water supply—you need a good well. You get a good, producing well when you specify a Layne drilled well. *Bulletin No. 100*

With A Layne Gravel Wall Well This technique and resulting arrangement of the new 134 Shutter Screen and gravel (shown here) permits the free flow of water into the well and affords the following advantages: larger shutter screen openings, reduced friction, reduced draw down and pumping head—thereby reducing pumping costs, increased specific capacity and more effective retention of native sands. Cemented wells are installed if indicated, and result in greater purity of supply as well as increased life of the well. *Bulletin No. 900*

With A Layne Vertical Turbine Pump Whatever the pumping requirement, there's a Layne pump to meet any pumping conditions. Layne Vertical Turbine Pumps come in a wide range of sizes and capacities, delivering 30 to 20,000 GPM and requiring from 4 to 42 inch well casings. The complete line of Layne Pumps include: Deep Well Vertical Turbine (oil or water lubricated), Short Coupled Vertical Turbine, Propeller, Mixed Flow, Fire Pumps and Volatile Liquids Pumps, Regular and "In-Line" Submersible. *Bulletins No. 200 (oil) 201 (water)*

LAYNE OFFERS COMPLETE WATER SERVICE: Initial surveys • explorations • recommendations • site selection foundation and soil-sampling • well drilling • well casing and screen • pump design, manufacture and installation construction of water systems • maintenance and service • chemical treatment of water wells • water treatment—all backed by Layne Research. Layne services do not replace, but coordinate with the services of consulting, plant and city engineers.

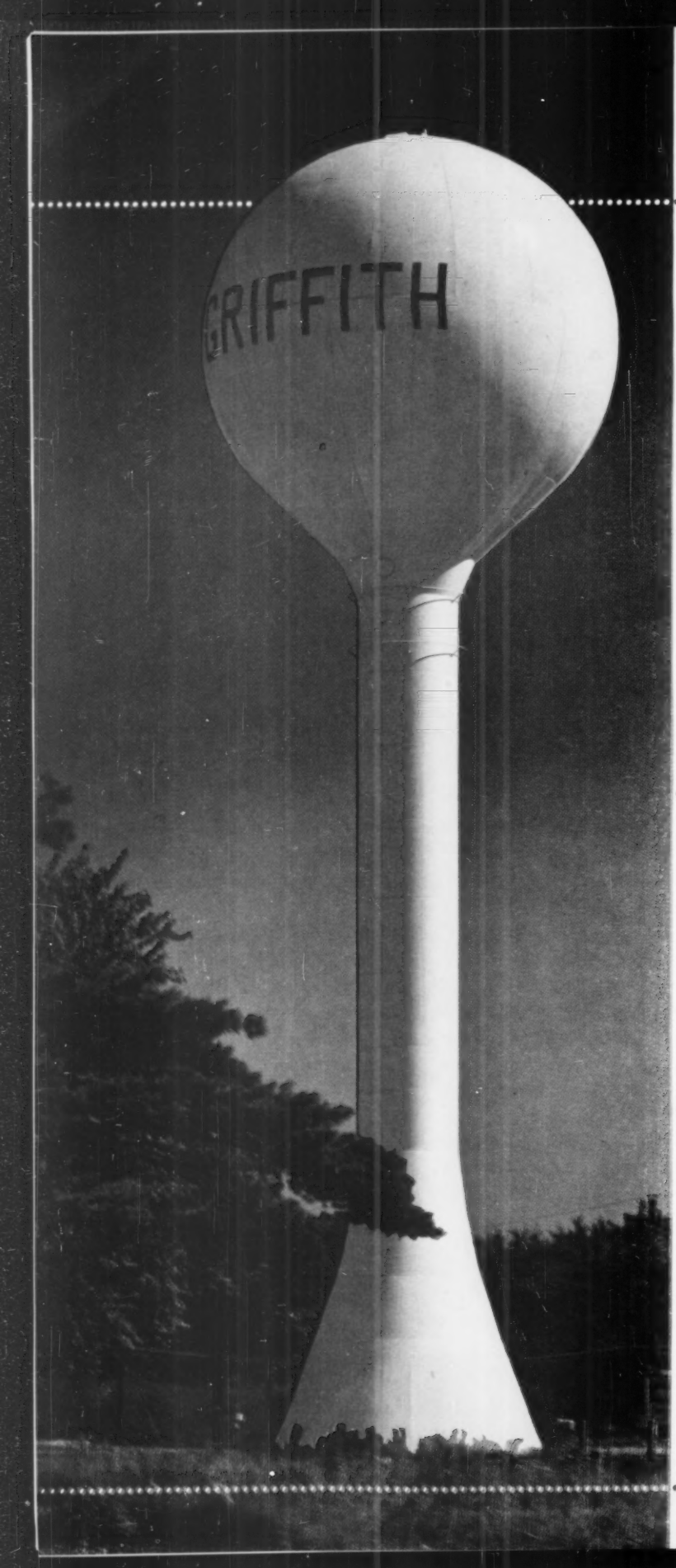
Layne SINCE 1882 — WORLD'S LARGEST WATER DEVELOPERS

LAYNE & BOWLER, INC., MEMPHIS

Offices and Factory—Memphis 8, Tenn.

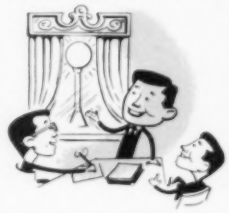
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

Sales Representatives in Major Cities



....You see so many

Civic leaders like Waterspheres because they are landmarks of proud, progressive communities.



City fathers like Waterspheres because each structure is backed by CB&I's seven decades of craftsmanship in steel.

Engineers like Waterspheres because only a minimum of ground area is required for foundations . . . and plates can be pickled and painted before shipment.

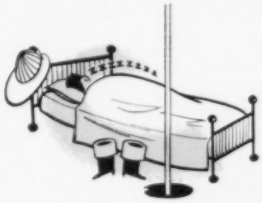
Maintenance men like Waterspheres because the integrated, all-welded structures present a minimum surface to paint and maintain.

M64SCB

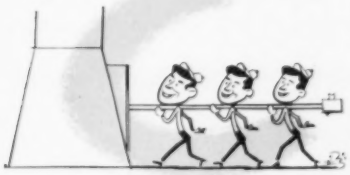
WATERSPHERES®

. . . because they satisfy so many people

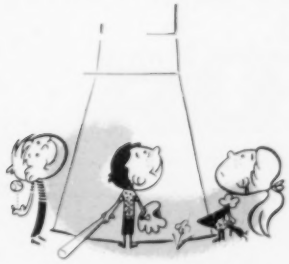
Taxpayers like Waterspheres because they are often responsible for reductions in fire insurance premiums.



Firemen like Waterspheres because they provide round-the-clock emergency water reserves.



Superintendents like Waterspheres because the functional bases can be used for storage or pumping, often eliminating the need for additional buildings.



Kids like Waterspheres . . . best of all. Why? Who knows? But did you ever pass one on the highway without a comment from the back seat? (*Parents like them because they're safe . . . kids can't climb Waterspheres.*)

The final selection of water storage facilities is often the responsibility of a small group. Vast numbers of the population are affected, however. And . . . if this choice is not suitable to the majority of citizens, loud protests are certain to be heard.

This is why more and more communities rely on CB&I Waterspheres (and Waterspheroids *) to solve their water storage problems. You just can't miss them. They landmark municipal progress . . . combining beauty and prestige with efficient water system planning. Yes . . . you see so many Waterspheres . . . because they satisfy so many people.

***WATERSPHEROIDS . .** are big brothers to Waterspheres. They differ only in shape and size. Watersphere capacities range from 25,000 to 250,000 gallons. Waterspheroids are available in capacities up to 500,000 gallons.

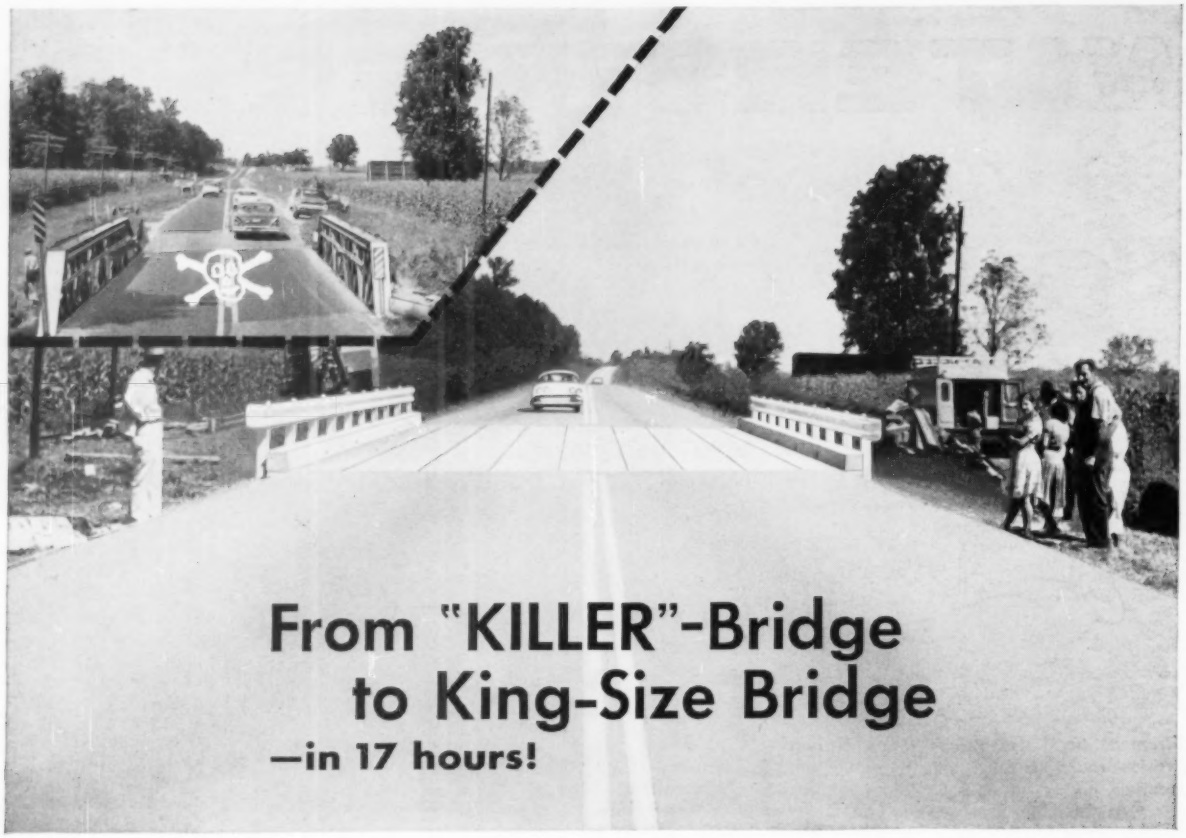
A brochure containing details and specifications on both the Watersphere and Waterspheroid is available. Ask for Catalog A-40.

CHICAGO BRIDGE & IRON COMPANY

CBI

332 SOUTH MICHIGAN AVENUE
CHICAGO 4, ILLINOIS

OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD



with A–M Concrete Bridge Beams

Only 17 hours were required by the Indiana State Highway Department to eliminate a deadly old "Killer" Bridge and replace it with a modern, wide structure near Scottsburg, Indiana. This new Amdek Bridge is not only safer to cross but is constructed of maintenance-free concrete.

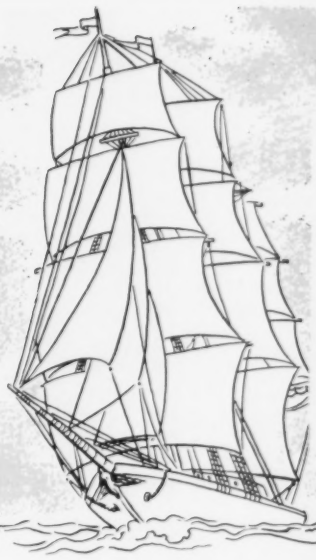
American-Marietta Company makes precast concrete beams for spans up to 36 feet and prestressed beams for longer spans. All are economical and made under factory-controlled conditions—delivered to the job quickly from American-Marietta plants strategically located throughout the nation.

Write today for colorful new brochure
PRECAST CONCRETE BRIDGE ELEMENTS

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

Why Rust-Oleum is different—

and what this difference, backed by 35 years of industry proof, means to you!



A Sea Captain developed it . . . Industry proved it!

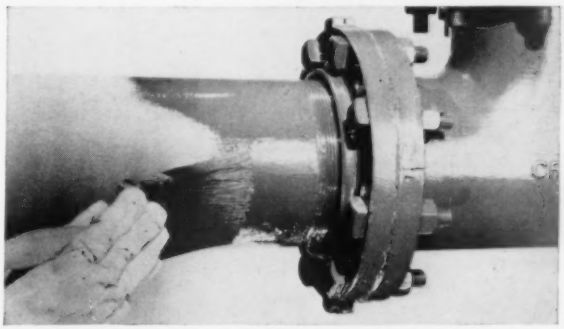
The original Rust-Oleum formula was developed nearly fifty years ago by Sea Captain Robert Fergusson, who became intrigued with the rust-stopping qualities of fish oil early in his career. Creating a *special treatment* for the fish oil, he used the *specially-processed fish oil* as the vehicle in combination with fine rust-inhibiting pigments. The result? A coating that actually *stopped rust* when applied directly over sound rusted surfaces, after scraping and wirebrushing to remove rust scale and loose rust. Possible, because the *specially-processed* fish oil penetrated the rust to bare metal. This was the birth of Rust-Oleum's *exclusive* 769 Damp-Proof Red Primer.

PROVED THROUGHOUT INDUSTRY FOR OVER 35 YEARS

Today, Rust-Oleum in its many systems and colors, has been proved throughout industry for over thirty-five years. This proof by leading industrial users is your assurance of savings in time, money, and metal. Economies made possible by the fact that Rust-Oleum 769 Damp-Proof Red Primer goes right over the sound rusted metal—usually eliminating costly surface preparations. And Rust-Oleum, in its various systems, resists rain, sun, fumes, heat, weathering, chemicals, etc., for lasting beauty over the years.

RUST-OLEUM NEW COLOR HORIZONS SYSTEM

The Rust-Oleum New Color Horizons System introduces a new coating concept to industry. It combines four important factors: (1) the ability to stop rust, (2) smart, modern color harmony, (3) the durability to last and last, (4) ease of application that saves time, money, and metal. See how this system can bring lasting beauty to your plant, machinery, equipment, pipes, tanks, structural steel, fences, etc. Write for complete information or contact your nearby Rust-Oleum Industrial Distributor. He maintains complete stocks for prompt service.



RUST-OLEUM®

There are imitations, but only *one* Rust-Oleum. It is distinctive as your own fingerprint.

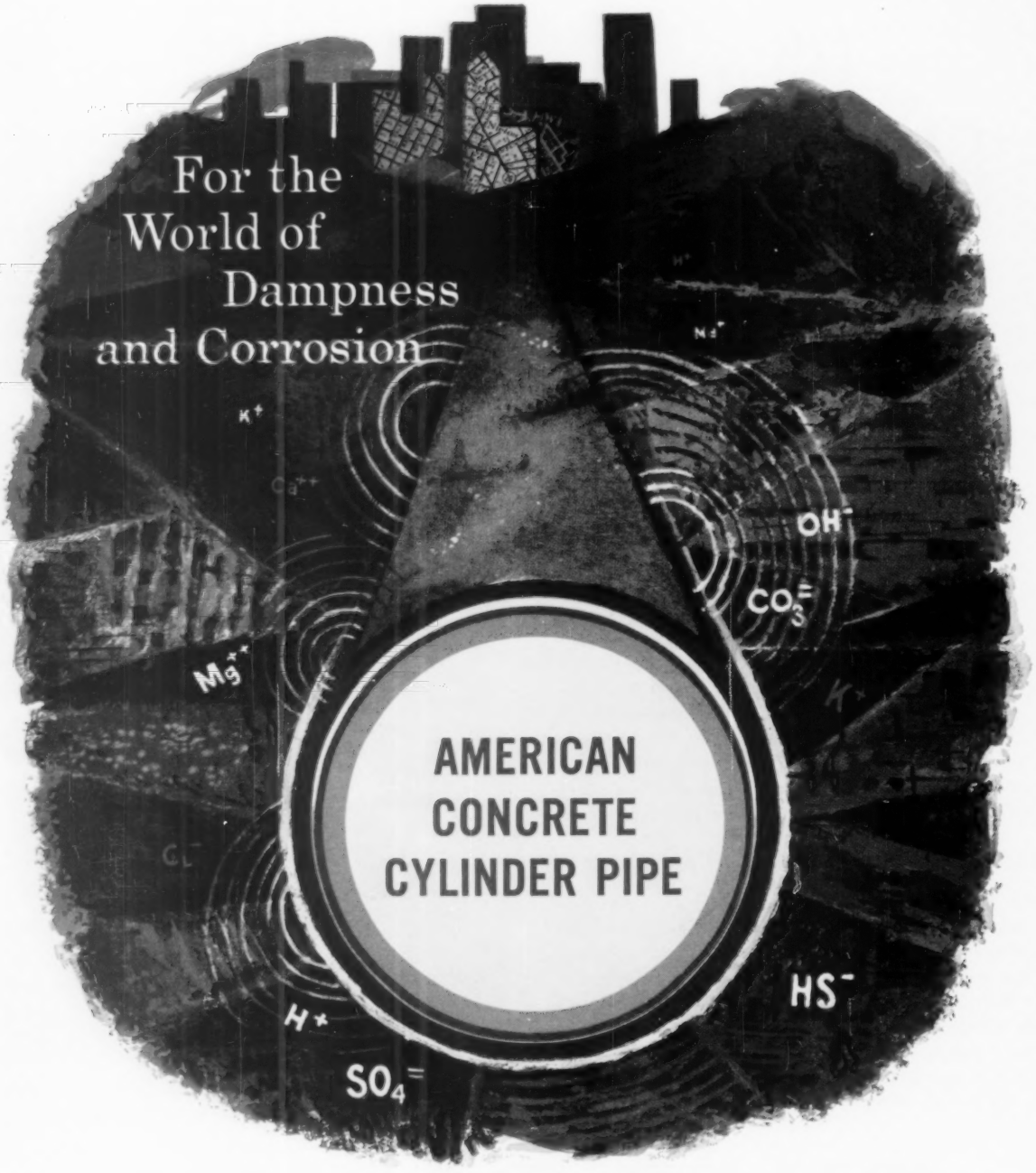
STOPS RUST!®

ATTACH TO YOUR LETTERHEAD

Rust-Oleum Corporation
2652 Oakton St., Evanston, Illinois

Please send me the following at no cost or obligation:

- ☐ New Color Horizons Systems Catalog featuring 110 actual color standards and 69 photo applications.
- ☐ Free test sample of Rust-Oleum 769 Damp-Proof Red Primer to be applied over sound rusted surface.
- ☐ Results of radioactive tracing study on Rust-Oleum fish oil penetration.



In the world of dampness and corrosion the most reliable material for permanent water supply and transmission lines is ageless concrete, working together with steel in a properly engineered composite structure. Concrete grows stronger with age, effectively resists soil stresses, and protects steel from electrolytic action and corrosion. American Concrete Cylinder Pipe is designed to obtain maximum advantage of the strength of steel and the protective characteristics and permanence of concrete. Properly installed, an American Concrete Cylinder Pipeline will retain its high flow capacity indefinitely without maintenance. Investigate the immediate and long-term economies of this superior quality pipe.

American PIPE AND CONSTRUCTION CO.

American Pipe and Construction Co. • Los Angeles • San Diego • Hayward • Portland
Bogota, Columbia / **American Concrete Pipe Co. (subsidiary)** • Phoenix • Albuquerque

A MEMBER OF THE AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION

Raleigh, N. C., Studies Its Business District

The most important element to consider in the determination of various spaces for use within the central business district is the use by the shopper. One of the principal attractions of the central business district is its large variety of goods and prices. These are valuable only when they are located close enough to allow rapid comparison shopping within a reasonable walking distance.

The shopper is a pedestrian. One automobile will occupy enough space to accommodate ten shoppers. Yet, within the very center of the shopping area, Fayetteville Street, there is more space devoted to circulation of the automobile than to the pedestrian. With the elimination of this automobile street, the shopper circulation area could be increased over 100%.

The establishment of a mall area would provide a quieter, safer, more pleasant environment free from traffic lights, horns, and exhausts. A large pedestrian plaza would facilitate easy shopper circulation from store to store.

By the establishment of a system of streets encircling the core of the central business district, serving as a by-pass for traffic not wishing to enter the center and also as a direct access system to the parking areas lying around the core, it would be possible to accommodate traffic and remove certain traffic carrying streets from the core of the area. This principle of separation of traffic is much the same as that the Highway Commission proposes in the Beltline around the City of Raleigh which would serve as a bypass for through traffic and also as a circumferential route for Raleigh metropolitan-area citizens.

According to the plan, Fayetteville, Hargett and Marin Streets may be entirely closed to traffic. All but a very few stores fronting on Fayetteville have access through the block to Salisbury or Wilmington Streets to facilitate loading and unloading. Those without double frontage could be required to receive services before or after store hours.

One city bus can bring as many people into the downtown area as 35 automobiles normally would. In other words, the removal of one bus trip within the central business district would add 35 automobiles to the city streets. If by some means the Raleigh citizen

(Continued on page 44)

Air Pollution Control Notes

Industry Helps in Vancouver

Success has been achieved thus far in the fight against air pollution in Vancouver, British Columbia, it was reported recently. Speaking at the University of Washington, Horace Sinclair of the Vancouver Air Pollution Control Society said much of the success was due to industrial cooperation. A chief inspector and three assistants enforce the city's 1955 air-pollution-control ordinance.

Evansville Joins

Evansville, Ind., has joined the United States Public Health Service's nationwide air sampling program. The city will do the sampling, with equipment furnished by the federal government.

Air Pollution Information Center

Case Institute of Technology in Cleveland, Ohio, is planning to provide an information center on air pollution problems for the benefit of municipalities and industries. Dr. Seymour Calvert, associate professor of chemical engineering at Case, said the center would not be for the general public. Primarily it would supply answers by letter. This will provide small communities, which cannot afford full-time air pollution staffs, with a place to go for technical advice and laboratory work.

Color Film Strips on Air Pollution

Diana Wyllie Limited of London, England, has prepared a pair of color filmstrips (35mm) on the scientific aspects of air pollution, by R. S. Scorer, editor of the *International Journal of Air Pollution*. Sir Hugh Beaver supplies a foreword to the strips. Part A deals with the "Nature, Production and Effects of Air Pollution" and Part B covers "The Dispersion and Accumulation of Air Pollution—Behavior and Appearance of Smoke." The strips (32 frames each), complete with full lecture notes, are priced at $12.50 and may be obtained from Diana Wyllie Limited, 18 Pont Street, London SW1, England.

Realtors Ask AP Law Enforcement

Atlantic City, N. J., one of the nation's most famous resorts, set up an air-pollution-control ordinance late in 1958 but the Real Estate Board of the city complained recently that enforcement of the law was not all it should be. In a letter to the City Commission, Maurice J. Krasney, chairman of the Board's civic and planning committee, said that the "soot deposit is becoming quite prevalent in many areas of Atlantic City." Mr. Krasney maintained that the soot is causing damage to buildings, automobiles and clothing. The Board told the Commission that " . . . it is our firm conviction that the terms and conditions of the ordinance should be enforced." The ordinance regulates the "blowing of stacks" at hotels and apartment houses and limits the burning in outside incinerators. A recent report from Atlantic City showed that through October 1959, there was no record of anyone being summoned to City Hall for violating the law.

Columbus Fighting Car Pollution

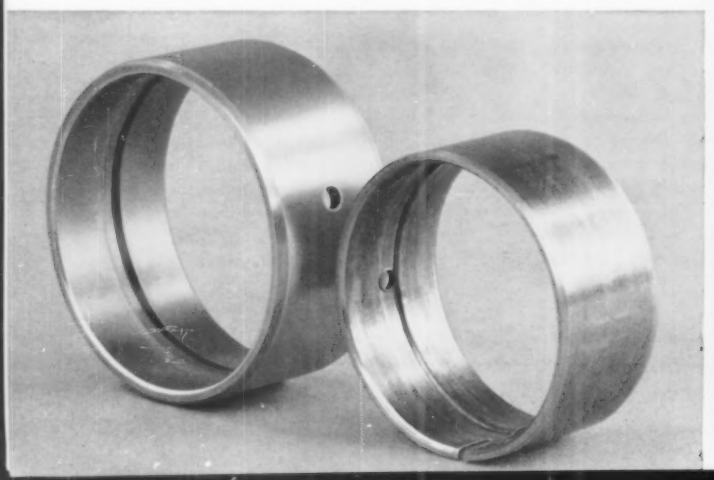
Ten years of air pollution control in Columbus, Ohio, have succeeded in reducing dust fall by 30% and increasing downtown visibility by one third, according to a report given recently by Richard D. Schafer, head of the city's Division of Smoke Regulation and Inspection. Schafer pointed out, however, that air pollution from automotive vehicles was becoming a problem. One method of fighting the situation—through the proper maintenance and operation of vehicles—is being followed by Columbus: it is issuing a pamphlet on the subject, similar to the one used by New York City for the past three years.

—Prepared by Kenneth Kowald

Onan Electric Plants are when this independent

Big, beefy bearings for longer life. (Lower left) double-size Onan bearings vs. small bearings (right) used in many other makes. Larger bearing surface reduces wear, stretches time between overhauls. Onan builds up to performance—never down-to-a-price.

The engine that ran equivalent to 487,888 automobile miles. Here's endurance no auto could begin to match. Onan engine #1068 was operated for 12,197 hours. It was stop-started 100 times. At test's end #1068 and generator were delivering their stated output.



Performance Certified only

tester says O.K.

His job is to provide a double-check on Onan's own tests and testing methods

The man at the left is an expert from an independent testing laboratory. On the job, he believes nothing except what his trained eyes, ears and scientific testing instruments tell him.

He, and others like him, pay frequent surprise visits to Onan factories. He can pull any Onan plant off the test line. Put it through its paces. Recheck the checks Onan engineers and inspectors have already made. He has authority to pull a whole series of plants off the line if he finds one fault. He does all this even though every Onan plant is tested for hours by Onan personnel *before it is shipped.*

Onan takes these special precautions to make *doubly* sure that you get all that you pay for, and more, when you own a Performance Certified Onan. For more details—and an analysis of your primary and stand-by power needs—see the Onan distributor nearest you. He's listed in the telephone classified section in all major cities. Or write direct.

ONLY ONAN GIVES YOU THIS GUARANTEE

Onan
PERFORMANCE CERTIFIED
We guarantee that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
D. W. ONAN & SONS INC.
Minneapolis 14, Minnesota

Onan®

World's Leading Builder of Electric Power Plants

D. W. ONAN & SONS INC., 2526 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.

(Continued from page 41)

could be encouraged to use the mass transportation system, even occasionally, the future traffic problem would be reduced.

As more commuters continue to flow into the downtown area from surrounding towns, it may be feasible to establish express routes for buses from outlying points around the city. This service could be established during the morning and afternoon peak hours and supply rapid, through access from outlying pick-up points to the downtown pedestrian loading areas.

W. H. CARPER
City Manager

New-Style Phone Pays City $90 a Year

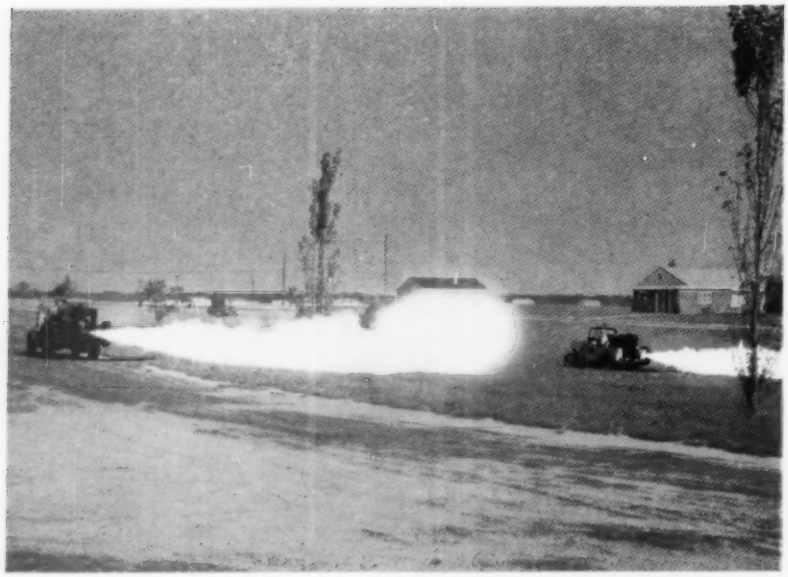
For the latest in outside telephone booths, see those in Hollywood, Florida. The Southern Bell Telephone and Telegraph Company's new phones are the first of their kind in South Florida and the first anywhere, outside the home, in an eye-pleasing beige color. Early indications are that colored instruments increase usage, apparently a forerunner of more installations to come and an extension of increasing commercial and industrial applications of color engineering.

Installations are rented and pay lessees 15% of the gross return after taxes.

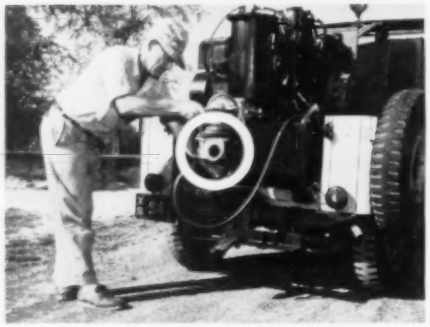
Revenues paid to the City of Hollywood average approximately $90 for each booth on city property.

LEE BRUNN
Public Information Secretary
City of Hollywood, Florida

Phones, inside a Plexiglas case, are bolted to light standards.



Fogging with LETHANE 384 *in Cape May County, New Jersey.*



HEAT-STABLE LETHANE 384 *is unaffected by high temperature as it passes this critical hot zone on the fogging machine.*

Most effective knock-down agent for fogging...

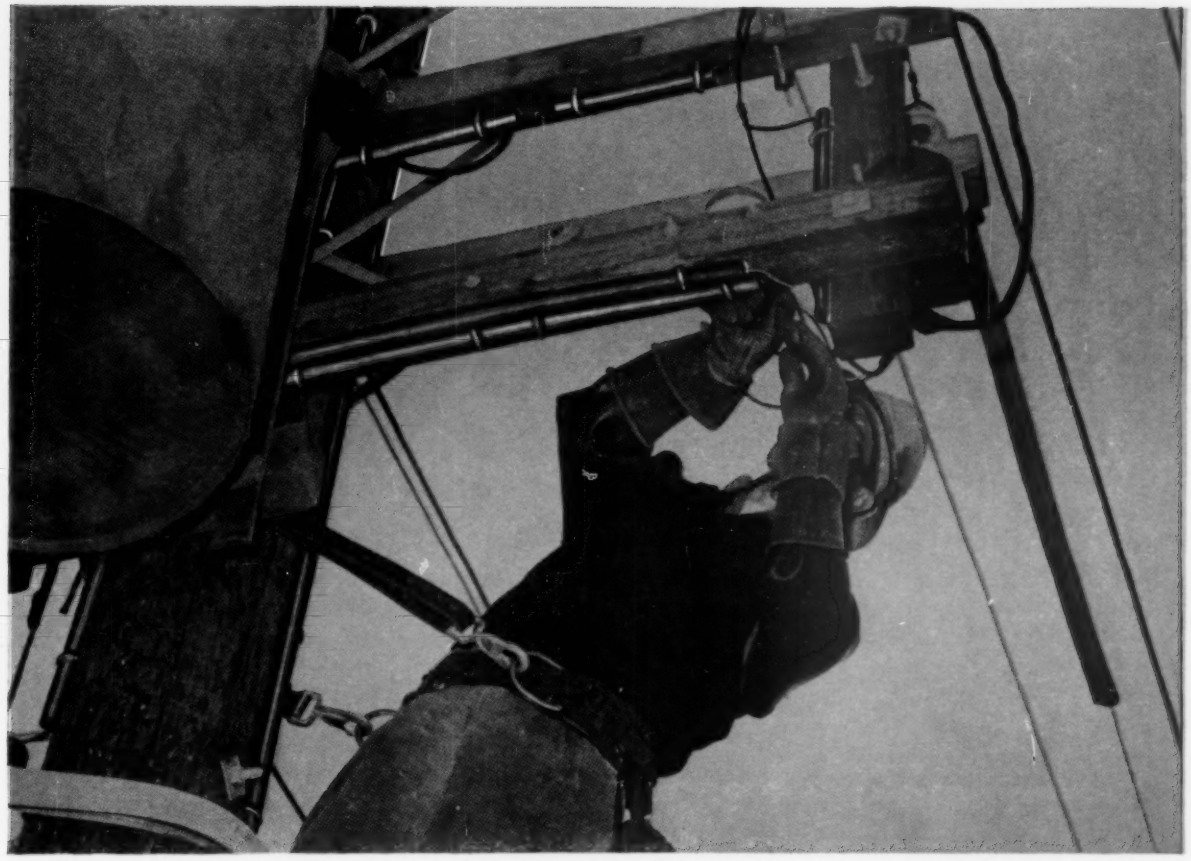
LETHANE 384

Anyone faced with the problem of controlling mosquitoes . . . and the responsibility of using public or private funds to accomplish it . . . should be totally familiar with LETHANE 384. Highest percentage of knock-down and kills is assured when LETHANE 384 is used as recommended in fogging concentrates and adulticiding sprays . . . alone, with DDT or with malathion. Be sure your mosquito control program is built around economical, heat-stable LETHANE 384. Write to our Sanitary Chemicals Dept. for complete information.

Chemicals for Industry
ROHM & HAAS COMPANY
WASHINGTON SQUARE, PHILADELPHIA 5, PA.

LETHANE *is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.*

Naugatuck KRALASTIC®



Here's why large East Coast utility chooses **KRALASTIC** conduit

Ease of use Unlike the wood moldings and rigid type of conduit normally used, KRALASTIC conduit can be flexed to follow irregularities of pole or mounted equipment, saving many needless breaks or fittings. It is simply and quickly cut to length with a hacksaw, securely stapled in place. And conduit of KRALASTIC is easy to handle because it's lighter than aluminum.

Protection KRALASTIC is an excellent electrical insulator. It is extremely tough, even in thin-wall sections, in this case allowing reduction in conduit diameter from the previously used 2" to 1". It not only requires less material, but is less bulky and easier for linemen to climb around. KRALASTIC's unusual toughness protects against accidental damage from linemen as well as storms and other causes. And, of course, KRALASTIC can't rust, rot, or corrode, withstands weather at its worst.

Economy Because extruded KRALASTIC conduit is relatively inexpensive, unusually easy to work with, and extremely durable, it provides important savings in all areas.

What's *your* line? If it involves piping or conduit, it might well call for KRALASTIC... the original ABS plastic that has proved its superiorities in nearly 10,000 miles of piping installations, in other products from baby combs to football helmets. Better look into KRALASTIC *now*.

US RUBBER

United States Rubber

Naugatuck Chemical Division

DEPT. 444K ELM STREET
NAUGATUCK, CONNECTICUT

KRALASTIC RUBBER-RESINS • **MARVINOL** VINYLS • **VIBRIN** POLYESTERS

Akron · Boston · Chicago · Gastonia · Los Angeles · Memphis · New York · Phila. · CANADA: Naugatuck Chemicals · Elmira, Ont. · Cable: Rubexport, N.Y.

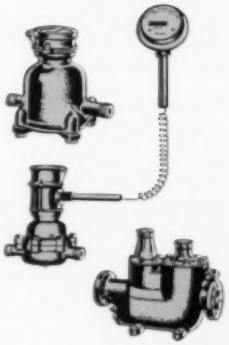
cuts wear and noise at the water level

It's standard on all Badger Disc meters. Dovetail thrust roller insert fits vertically into the thrust roller slot to form a smooth track on which the roller rides countless times — quietly without wear. With the slot 77% shorter, original strength is retained and possible distortion in this area is eliminated.

Accurate registration is constant because the nutating disc never shifts position. After many years of service an inexpensive insert can be replaced if necessary (instead of a possible chamber replacement).

The dovetail thrust roller insert is just one of many refinements to emerge from Badger's concentration on *meter* research and development. For further details, see your Badger representative. Ask him, too, about the new Read-o-Matic outdoor meter-register. Proof that answers for better water metering come first from Badger.

BADGER'S BIG PARADE OF PRODUCTS FOR BETTER WATER METERING



Badger Water Meters

BADGER METER MFG. CO. • **4545 W. Brown Deer Rd., Milwaukee 23, Wisconsin** • *Offices in Principal Cities*

Size No Deterrent to Good Refuse Disposal

Farmville, Virginia, population 4,700, believes in trouble-free refuse disposal and consequently utilizes the sanitary-landfill method. Two trucks bring an average of 27 cubic yards of packed refuse and 20 to 25 cubic yards of loose rubbish to the 13-acre disposal site daily. An International Drott TD-9 Four-in-One unit compacts the refuse and covers it with approximately four inches of earth at the end of each working day. The completed fill is covered with two to three feet of earth. The fill area is being raised 15 to 18 feet. Here the tractor is spreading and crushing the refuse before covering it.

Waste Facilities Inventory Available

The Public Health Service, Washington, D. C., has announced that "Inventory of Municipal and Industrial Waste Facilities," PHS publication #622, has been made available to the public.

The publication is a listing of physical and operating data on all municipal and some industrial waste-treatment facilities in the United States, as of January 1, 1958. It consists of nine volumes, corresponding to the nine administrative regions of the Department of Health, Education and Welfare. The volumes are:

I—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont (65 cents).

II—Delaware, New Jersey, New York and Pennsylvania ($1.75).

III—Kentucky, Maryland, North Carolina, Virginia, West Virginia and the District of Columbia ($1).

IV—Alabama, Florida, Georgia, Mississippi, South Carolina and Tennessee ($1).

V—Illinois, Indiana, Michigan, Ohio and Wisconsin ($1.75).

VI—Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota ($1.25).

VII—Arkansas, Louisiana, New Mexico, Oklahoma and Texas ($1).

VIII—Colorado, Idaho, Montana, Utah and Wyoming (60 cents).

IX—Arizona, California, Nevada, Oregon, Washington, Alaska and Hawaii ($1.25).

Individual volumes may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for the prices given. The price for the full set is $10.25.

Citizenry Informed About Refuse Collection

Iowa City, Iowa, has distributed a new refuse-collection information pamphlet to all residents of the city. This booklet is intended to create better understanding which we hope will lead to more efficient and satisfactory service, thereby enabling us to improve on a sanitation program that is already regarded as a model one by many other communities. New residents are supplied with a copy of the pamphlet as soon as they move into town.

The pamphlet provides general information on refuse-collection policy carried on by the municipality and financed through general taxation. Basic information includes preparation and proper storage of garbage and rubbish, general specifications as to the type and size containers to use, and location of the container on the property. It also contains a check list for the collector, listing certain violations of the sanitary code and requesting the householder's cooperation in correcting such conditions. This can be presented to the householder by the collector whenever violations are found.

A final piece of information consists of the Sanitation Department's phone number and also the phone number of many other city departments, including fire and police.

PETER F. ROAN, *City Manager*
Iowa City, Iowa

One page of the pamphlet serves as a miniature phone directory of city departments, including emergency numbers for fire and police departments.

For Sanitation Department service or information call Iowa City 9607

. . . and to reach other departments call:

City Manager City Clerk City Engineer City Traffic Bureau City Purchasing Building Permits and Inspection Plumbing Permits and Inspection Street Maintenance	9607
Library	4272
Recreation and Playgrounds	8-5493
Sewage Treatment Plant	3927

Telephone . . . Emergency

Fire	9617
Police	9613

FREE CATALOGS

These Catalogs Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 53.

Table-Top Diazo Copying Machine

100 . . . automatically separates copies from originals before delivery, stacking them without any need for handling by the operator. It copies translucent and semi-translucent originals at a cost of approximately 1½ cents a copy and produces hundreds of letter-size copies per hour. For full facts on the new Copyflex Model 120, write the ADVERTISING MGR., CHARLES BRUNING CO., INC., MOUNT PROSPECT, ILL.

Profitable Sludge Disposal

101 Still dumping or burning sewage sludge cake? Throwing away a possible additional source of municipal income? *Sewage Sludge Utilization Datalog* can show you how to turn sewage sludge disposal into a profitable revenue-producing municipal operation. For a copy, write ROYER FOUNDRY & MACHINE CO., 165 PRINGLE ST., KINGSTON, PA.

Filters for Swimming Pools

102 A 14-page catalog of filter plant theory, installation, operation and maintenance, is offered by B-I-F INDUSTRIES, INC., 345 HARRIS AVE., PROVIDENCE 1, R. I. It should be helpful to owners and operators of swimming pools as well as engineers responsible for municipal water plants. Request *Bulletin* 1860.21A-1.

Nonclog Sewage Pumps

103 These rugged pumps offer dependable, trouble-free service. They include dry pit, wet pit, submersible and horizontal units with choice of impeller. *Bulletins* 1850.2 and 1850.5 give full facts. For copies, write PACIFIC PUMPING CO., 9301 SAN LEANDRO ST., OAKLAND 3, CALIF.

Metal Protective Paints

104 Here's a paint system that gives metal structures protection against corrosion in all three coats—primer, intermediate and finish. It is based on M-50 pigments. For technical details, write NATIONAL LEAD CO., 111 BROADWAY, NEW YORK 6, N. Y.

Unclogs Sewer Lines

105 A sewer solvent that is applied at manholes removes and loosens debris, dissolves grease, roots and cellulose. It is called ND-25 and is thoroughly described in literature, available from NATIONAL CHEMSEARCH CORP., DALLAS, TEXAS.

Metal Gratings

106 Riveted, welded or pressure-locked, in steel, aluminum and other metals—you'll find there's an IRVICO grating to meet your every need and specification. Catalog literature will give you the facts. Write IRVING SUBWAY GRATING CO., INC., 1530 27TH ST., LONG ISLAND CITY 1, N. Y.

Fluorescent Safety Paint

107 These high visibility, attention-getting colors offer the same protection from dawn to dusk that reflectorized material offers at night. Full facts can be obtained from a "where-to-use" booklet, municipal "product-in-use" case histories, fluorescent demonstrator "Color Card", and detailed 12-page HI-VIZ idea brochure. Write LAWTER CHEMICALS, INC., DEPT. MI, 3550 TOUHY AVE., CHICAGO 45, ILL.

In Case of Emergency

108 Valuable, as well as informative, literature that will be of interest to municipal emergency crews, police and fire department personnel and waterfront safety teams is available from NATIONAL CYLINDER GAS DIVISION OF CHEMETROL CORP., 840 N. MICHIGAN AVE. DEPT. 10D, CHICAGO 11, ILL. It gives cogent facts on Handy resuscitators.

Tapping Machines

109 *Bulletin* T54 will acquaint you with the Smith S-54 tapping machine, which is used with tapping sleeves, hat flanges, saddles and tapping valves to make 2" through 12" connections under pressure to cast iron, cement-asbestos, steel and reinforced concrete pressure pipe. Write THE A. P. SMITH MFG. CO., EAST ORANGE, N. J.

Save 70% in Grader Blade Costs

110 A new 3-piece grader blade installation, consisting of a self-sharpening, hardened thicker center section and two conventional end blades, can save up to 70% in blade replacements and downtime. The center section resists crowning. For full facts on Pacal-X-Tra-Edge Blades, write GRADER BLADE DEPT., PAPER, CALMENSON AND COMPANY, ST. PAUL 13, MINN.

Portable Earth Auger

111 Here's a unit that can help you cut down labor costs 50%. It drills under shrubbery, streets and walks without damaging pavement, roadbed, or disrupting traffic. It has long range—200 feet or more; features hydrodynamic dirt flush; drills a 2" hole laterally at the rate of 5' per minute. For descriptive literature, write MODERN PRODUCTS, INC., DEPT. AM-11, EXETER, NEB.

Motor Starters, Relays and Switches

112 A complete line of electric control devices, such as manual and magnetic motor starters, contactors, relays, solenoids, limit switches and push buttons, and pricing tables for each device, are included in a 72-page catalog along with descriptive information, wiring diagrams, dimensions and application information. Available supplemental bulletins are listed for each product type. For a copy of *Catalog* GEC-126D, write GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y.

Save 20% on Traffic Sign Installation Costs

113 Oregon has by specifying reflectorized warning, informational and regulatory signs of overlaid plywood. And it has found them to be strong, legible, attractive and able to stand up under prolonged weathering. For detailed specifications and application data, write DOUGLAS FIR PLYWOOD ASSOCIATION, TACOMA 2, WASH.

Job-Matched Tractor Mowers

114 A wide range of job-matched power and mowing equipment is available from INTERNATIONAL HARVESTER CO., DEPT. AC-4, P. O. BOX 7333, CHICAGO 80, ILL. It includes tractors from 13.4 to 61 hp teamed with reel, rotary, Hammer Knife and cutter bar mowers to speed mowing operations from parkway to playlot.

Watertight Refuse Body

115 *Form* A-433-A contains specifications and construction features of the Hi-Speed Ram-Pak, a square-shaped refuse collection truck body that can be loaded from either side, accepts large, bulky objects, packs fast and efficiently and unloads easily. For a copy, write BAUGHMAN MFG. CO., INC., JERSEYVILLE, ILL.

"The V-Notch Story"

116 . . . explains how chlorine feeding can be made precise, regular and uncomplicated. And it describes how easy it can be to obtain quick accurate control in a new working feed range when you need to step up equipment needs. For a copy, write WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE 9, N. J.

Air Control Valves

117 Crispin valves are designed to operate in any line handling water, fluid petroleum products, sewage and similar liquids-in-motion. A 26-page bulletin gives complete specifications and explanations of their operating characteristics. For a copy of *Catalog* R, write MULTIPLEX MFG. CO., DEPT. E, BERWICK, PA.

Stops Rust—Free Sample

118 A 30-page technical report shows how Rust-Oleum penetrates through rust to bare metal; a 38-page catalog explains its "New Color Horizons" system. You can obtain both publications and a free test sample of 769 Damp-Proof Red Primer for application over sound rusted surfaces from RUST-OLEUM CORP., 2651 OAKTON ST., EVANSTON, ILL.

Selecting Guardrail

119 A new 12-page catalog will give you full facts on Flex-Beam guardrail, which is galvanized to simplify painting and reduce maintenance and available in double lengths to speed installation and reduce costs. Write ARMCO DRAINAGE & METAL PRODUCTS, INC., DEPT. A, 5880 CURTIS ST., MIDDLETOWN, OHIO.

(See page 51 for more Bulletins)

BEST DUMP HEIGHT IN ITS CLASS

Loads trucks up to a foot higher than ordinary tractor shovels

In its class, only an Allis-Chalmers 72-hp HD-6G can lift and dump your loads above the 9-ft level! And you get a bonus in reach, too. This 1½-yd unit easily dumps over the center of sideboarded 12-yd trucks . . . puts loads just where you want them on stockpiles or when loading out over excavations.

We'd like to demonstrate on your job in your trucks.

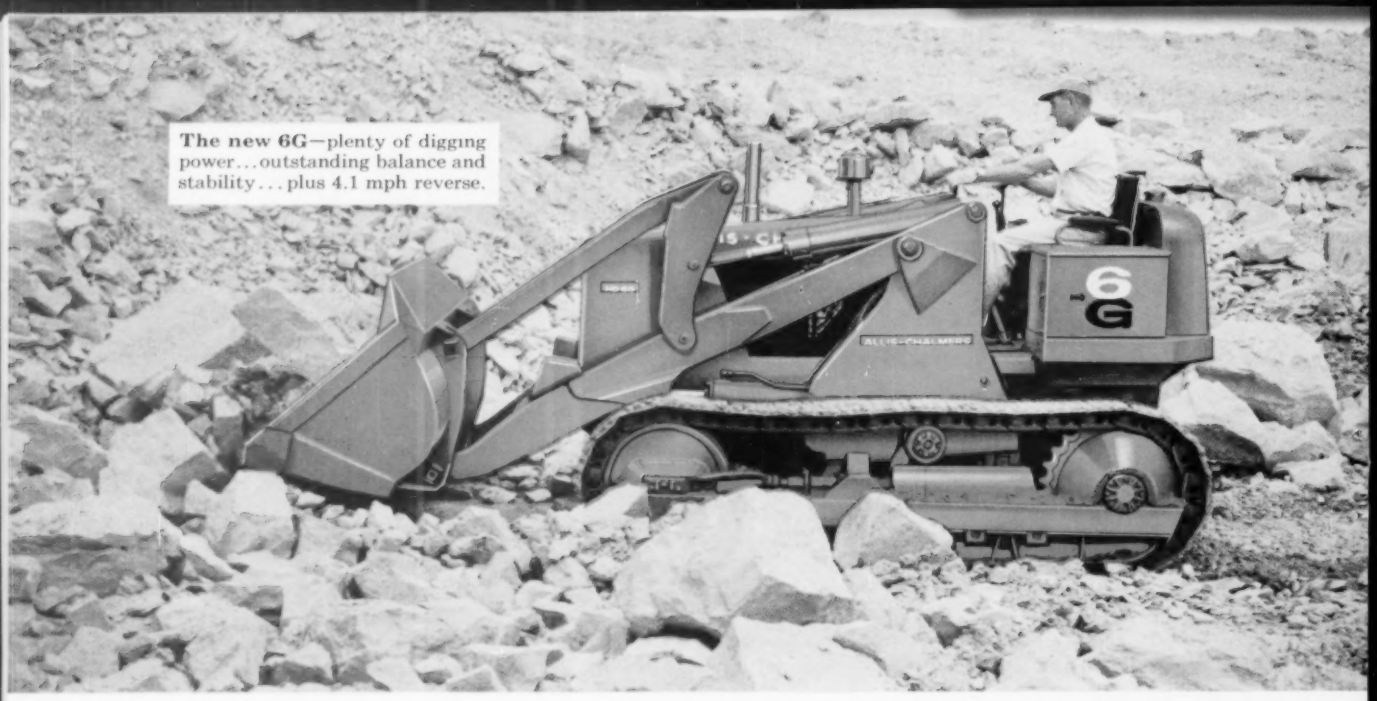
ALLIS-CHALMERS

HD 6G

move ahead with

ALLIS-CHALMERS

...power for a growing world



Your Allis-Chalmers dealer will show you the

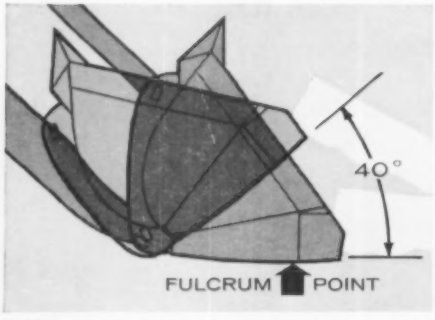
6G's BIG DIFFERENCE

9 ft dump height, long reach, plus many other exclusive advantages make it the finest 1½-yd Tractor-Shovel you can buy.

Shown here are only a few of the important differences found on the 72-hp HD-6G.

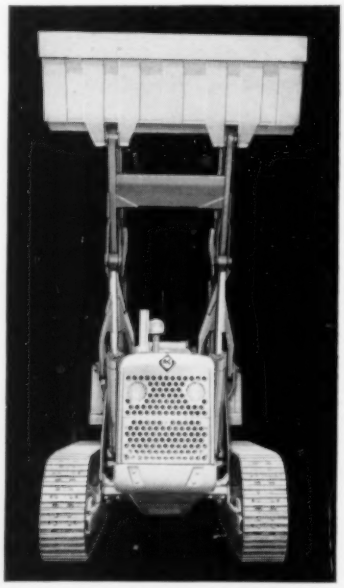
In addition, the 6G is alone in its class with the kind of big-tractor main frame that absorbs shock, adds to dependable, long-life operations. The 6G offers you true unit construction, too . . . allowing quick replacement of clutches, transmission or engine without disturbing adjacent assemblies.

Be sure the "big difference" is on your side—your Allis-Chalmers dealer can give you the details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



37% more pry-out than any in its class. Exclusive rolling leverage develops over 10½-tons of breakout because the fulcrum point is close in behind the cutting edge.

Permanently lubricated truck wheels, idlers and support rollers—exclusive PERMA-SAFE design with Positive Seals and power-saving tapered roller bearings.



"In-line" booms and linkage. New straight-line design adds solid-steel strength from ground level to more than 9-ft dump height.

move ahead with ALLIS-CHALMERS

...power for a growing world

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Electric Drainage Pumps

120 With Flygt submersibles on the job, water and sludge move out. These pumps give all-head performance, have no external suction parts to cause leaks, or loss of capacity through increased lift, and never need to be primed. They work well at all heights above sea-level, and as well at 120°F as below freezing point. For descriptive booklet, write STENBERG MFG. CORP., P. O. BOX 146, HOOSICK FALLS, N. Y.

Largest Single-Engine Track-Type Tractor

121 A well-illustrated 16-page booklet describes latest improvements and design features of the 335-hp D9 Series E tractor, available with three different transmissions. Each type of transmission is detailed and all matched equipment listed. For a copy of *Form*-33443, write CATERPILLAR TRACTOR CO., PEORIA, ILL.

Two-Way Radio

122 . . . for fire and police vehicles must permit no margin of error. That's why performance reliability must be a major consideration when selecting equipment. For facts on 2-way radio units that will bring your system up to date in efficiency and in economy, write MOTOROLA COMMUNICATIONS & ELECTRONICS, INC., 4051 AUGUSTA BLVD., CHICAGO 51, ILL.

Trenching Costs Go Down

123 . . . down, down, when the 5-position M51 backhoe rolls up to a job. For it takes frost and hard ground in its stride, digs to 13½', reaches over 20 feet at ground-level, and has a dump clearance of 11'. For full facts on this responsive rig, write JOHN DEERE INDUSTRIAL DIVISION, 3300 RIVER DRIVE, DEPT. 546, MOLINE, ILL.

Refuse Collection with Roto Pac

124 . . . gives you a container system that offers lower cost, neater and more sanitary operation, automatic continuous compaction of loads, and a generally more efficient program. For literature giving full facts, write ROTO PAC CONTAINERIZATION, CITY TANK CORP., CORONA 68, N. Y.

Thicken, Dewater Sludge Without Chemicals

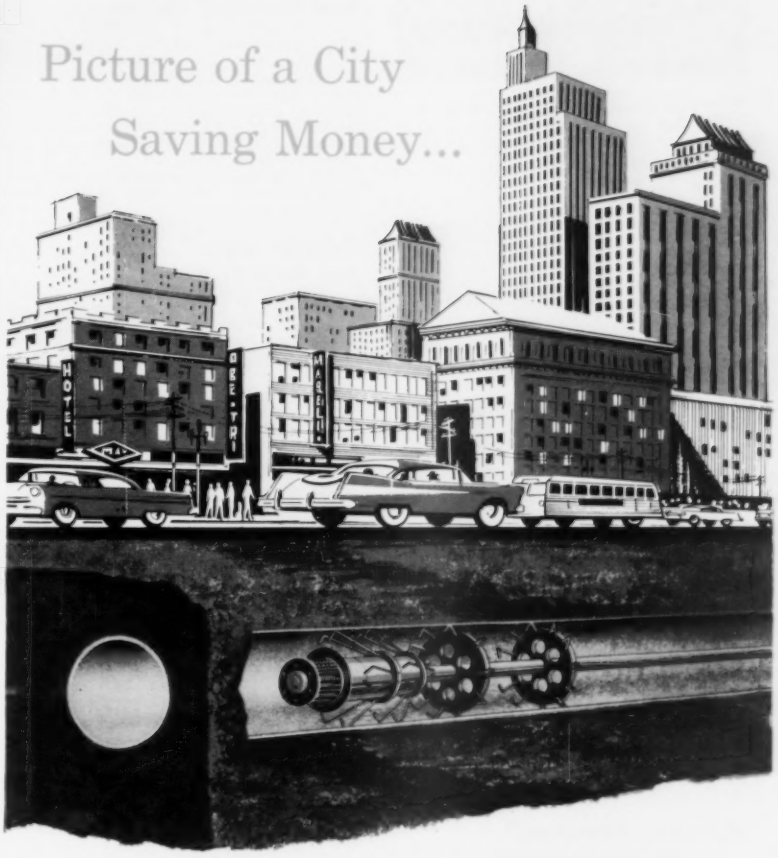
125 *Technical Bulletin* 100 describes the new Nerco-Edco Roto-Plug sewage sludge concentrator, which thickens and dewaters municipal and industrial wastes without the use of chemicals and with about 1/10 the power required by vacuum filters. Write NICHOLS ENGINEERING & RESERACH CORP., 70 PINE ST., NEW YORK 5, N. Y.

Protective Fencing

126 Tests seem to indicate that neither time nor fire, nor impact nor corrosion seem able to lessen the strength and serviceability of Cyclone steel chain link fence fabric. For details, write CYCLONE FENCE DEPT., AMERICAN STEEL & WIRE, DEPT. B-40, 614 SUPERIOR AVE., N. W., CLEVELAND 13, OHIO.

(See page 52 for more Bulletins)

Picture of a City Saving Money...



Spunline Relines Pipe Lines in-place without removing the pipe

Another city such as Spokane, Dallas, or Los Angeles will soon be enjoying the savings of another rehabilitated pipe line. The flow will increase, the pumping cost will drop and the pipe line will be good as new for at least another quarter of a century.

And traffic will move without interruption or inconvenience to the public.

Spunline® is applicable to pipe lines down to 4" and may be used in cast iron, steel, concrete and wrought iron pipe lines.

Write, wire or phone PIPE LININGS Inc.

Subsidiary of American Pipe and Construction Co.

2414 East 223rd Street, Wilmington, California
P.O. Box 457 • Phones: SPruce 5-3273 — TErminal 5-8201
Rail Address, Pacific Electric, Watson, California

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 53.

If Someone Damages These Hydrants

127 . . . you can replace them without digging and costly repairs. For when struck, the coupling shears off at the ground line and the break-flange gives way, without damage to stand pipe or nozzle sections. Descriptive literature gives full facts. Write EDDY VALVE CO., WATERFORD, N. Y.

Luminaire with Open-Bottom Plastic Refractor

128 . . . is now available for rural, suburban or parking lot lighting. It resists thermal shock, is unaffected by atmospheric conditions, concentrates more light where it is required. It is designed especially for the General Electric Suburban Luminaire. For engineering data, write HOLOPHONE CO., INC., OUTDOOR LIGHTING DEPT., NEWARK, OHIO.

Amplifies the Voice 20 to 30 Times

129 Here's an all-transistor megaphone with a range of more than 1200 feet that's ideally suited for police, CD work and marine and sporting activities. It weighs only 5 pounds and is controlled by a trigger type on/off switch. For full facts on Transhailer PTC 1003, write PYE CORPORATION OF AMERICA, 1149 RARITAN AVE., HIGHLAND PARK, N. J.

Diatomite Filtration

130 This type of filtration is said to require 75% less filter housing area, yet effectively removes suspended solids and lowers water turbidity. Technical reprints and an illustrated brochure, available from JOHNS-MANVILLE, BOX 14, NEW YORK 16, N. Y., gives facts on Celite, a diatomaceous silica product for use as filter media in water treatment plants.

Flexible Expansion Joints

131 Expansion joints help prolong the life of equipment in pressure and vacuum systems. Those of butyl rubber tend to retain their flexibility over long periods, even when handling severe chemicals. For descriptive literature, write MECHANICAL GOODS DIV., UNITED STATES RUBBER, ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Lightweight "Scooter" Truck

132 Here's a 3-wheel unit that adapts itself to numerous municipal jobs. It can haul an 800-pound payload for less than a penny a mile, backs right up to the door to collect or deposit loads, lends itself to parking meter servicing. For full facts on the 780 Truckster, write CUSHMAN MOTORS, 945 N. 21st, LINCOLN, NEB.

Goes Down Easy, Stays Down Longer

133 . . . and is traffic-ready in 3 to 6 minutes. That's a quick description of Catatherm, a reflective thermoplastic striping material that can be hot extruded directly and firmly to any pavement. Catalog C-160 gives full facts. Write CATAPHOTE CORP., TOLEDO 10, OHIO.

Marina and Boat Handling Equipment

134 A new line of waterfront service equipment includes a trailer-boat launcher, a hydraulic Sea-Hoist elevator, all-steel launching ramp, boat racks, floating slips and lift-type boat shelters. For literature, write CAHILL-DAVIS CO., 37 MCKINLEY PLACE, GROSSE POINTE 36, MICH., and ask about "Operation Waterfront," a 16 mm sound film on the problem of launching outboard-trailer boats and parking trailers in a large city.

Control Algae and Aquatic Weeds

135 Two highly informative booklets on this subject are being offered by PHELPS DODGE REFINING CORP., 300 PARK AVE., NEW YORK 22, N. Y. They are "The Use of Copper Sulphate in the Control of Microscopic Organisms" and "Copper Sulfate for Root and Fungus Control in Sanitary Sewers and Storm Drains."

Pedal-Controlled Washfountains

136 Municipalities will find many uses for these sanitary washfountains—in schools, municipal plants, institutions, public rest rooms, etc. They are foot-controlled, emit a clean spray of tempered water, and are self-rinsing. *Bulletin* K1204 gives full facts. Write BRADLEY WASHFOUNTAIN CO., 2333 W. MICHIGAN ST., MILWAUKEE 1, WIS.

How to Select a Standby Electric Plant

137 An 8-page folder outlines steps to be considered in the selection of an emergency electric generating plant, offers practical suggestions in planning and designing of the installations, and lists items to evaluate to meet specific requirements in specific installations. For a copy of "Standby Electric Plants and Controls," write D. W. ONAN & SONS INC., MINNEAPOLIS, MINN.

Reflectorized Street Name Signs

138 These signs stay bright around the clock. They're durable, weatherproof, fadeproof and legible, and they're available in three styles. For details and a complete street sign catalog, write CALIFORNIA METAL ENAMELING CO., 6904 E. SLAUSON AVE., LOS ANGELES 22, CALIF.

Plastic Pipe for Water Service Lines

139 Cresline KL is the designation for a plastic pipe that's approved for potable water use and is also excellent for natural gas lines. It is said to be remarkably resistant to corrosion, and costs 50-75% less to install than metal pipe. A descriptive folder gives full details; write CRESCENT PLASTICS, INC., DEPT. C-O, 955 DIAMOND AVE., EVANSVILLE 7, IND.

Diesel Engine Maintenance and Overhaul

140 . . . can be reduced to a minimum in expenditures of time, money and manpower, if the engines are Enterprise units, whose parts, accessories and controls are easily accessible. The entire 73 to 2284-hp line of Enterprise diesels are designed for maximum accessibility, easy, low-cost servicing. For facts, write ENTERPRISE ENGINE & MACHINERY CO., 18TH & FLORIDA STS., SAN FRANCISCO 10 CALIF.

Precast Concrete Beams

141 A new colorful brochure gives details, usefulness and economies of precast concrete beams for bridge spans up to 36' and prestressed beams for longer spans. For a copy, of "Precast Concrete Bridge Elements," write AMERICAN-MARIETTA CO., CONCRETE PRODUCTS DIV., 101 E. ONTRRIO ST., CHICAGO 11, ILL.

Flies and Mosquitoes Vanish

142 . . . when a Buffalo Turbine sprayer-duster goes to work, for this unit gets both larvae and adults. It operates for as little as 15 cents per acre, penetrates a city block from vehicle on the street and can cover 50 acres per hour. For literature, write BUFFALO TURBINE AGRICULTURAL EQUIPMENT CO., INC., 69 INDUSTRIAL ST., GOWANDA, N. Y.

Cut Cost of Overhead Maintenance

143 Here's an aerial lift that can be used for hanging and servicing traffic signals, tree trimming, fire fighting and rescue operations. Cities using it for street light maintenance have reduced labor costs up to 50%. For a complete file on Skyworker — literature, articles, specifications, lease and lease-purchase plans, write EMHART MFG. CO., SKYWORKER DIV., 761 WINDSOR ST., HARTFORD 1, CONN.

Patches Asphaltic Pavement

144 A mobile propane-fired infra-red patching unit for asphaltic pavement is the subject of a 5-page illustrated brochure, which also explains "infra-red energy" and includes notes on propane gas. For a copy, write PAVEMENT SALVAGE INC., 349 OHIO RIVER BLVD., EMSWORTH, PITTSBURGH 2, PA.

Sludge Pumps for Sewage Treatment Plants

145 These pumps can be used for a wide range of applications including handling raw and digested sewage sludges. They are available in simplex, duplex, triplex and quadraplex designs, with 7-, 9- or 11-inch plunger diameters. Capacities range up to 125 psi. For literature on the complete line, write MARLOW PUMPS, DIV. OF BELL & GOSSETT CO., MIDLAND PARK, N. J.

Plastic Valve Tee for Water Systems

146 Here's a plastic fitting that's tough, strong, lightweight, free from corrosion and permits you to make safe connections under pressure. Its body, cap and plug are made of Kralastic; pilot screw and cutter are of stainless steel. For full facts, write UNITED STATES RUBBER, NAUGATUCK CHEMICAL DIV., DEPT. 344K ELM ST., NAUGATUCK, CONN.

For More Sanitary Back-Door Refuse Collection

147 The Carry-Barrel, a plastic, waterproof 50-gallon refuse collection barrel with puncture-proof bottom has been improved to make its use in back door refuse service more efficient. For details, write COUNTY CHEMICAL CO., 1235 NEWBRIDGE RD., NORTH BELLMORE, N. Y.

Helicopters for Municipal Use

148 If you're interested in knowing how other communities use helicopters, the new brochure, "America's New Mounted Police," will give you the facts. It also describes OCDM procedures and the matching funds program, the Hiller 12E and accessories. Write COMMERCIAL DIVISION, HILLER AIRCRAFT CORP., PALO ALTO, CALIF.

(See page 56 for more Bulletins)

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

STUCK?

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 48

100	112	124	136	148	160	172	184	196	208	220
101	113	125	137	149	161	173	185	197	209	221
102	114	126	138	150	162	174	186	198	210	222
103	115	127	139	151	163	175	187	199	211	223
104	116	128	140	152	164	176	188	200	212	224
105	117	129	141	153	165	177	189	201	213	225
106	118	130	142	154	166	178	190	202	214	226
107	119	131	143	155	167	179	191	203	215	227
108	120	132	144	156	168	180	192	204	216	228
109	121	133	145	157	169	181	193	205	217	229
110	122	134	146	158	170	182	194	206	218	230
111	123	135	147	159	171	183	195	207	219	

I would also like to receive manufacturers' booklets on.....

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.....

Name: (Please Print).....

Title:.....

Address:.....

.....

A Listing of Your Business Connection is Important 4-60

To THE AMERICAN CITY's Catalog Supply Department:
Please send me further information on products described in "Purchasing News" section beginning on page 213, as circled below:

899	904	909	914	919	924	929	934
900	905	910	915	920	925	930	935
901	906	911	916	921	926	931	936
902	907	912	917	922	927	932	937
903	908	913	918	923	928	933	938

I would also like to receive manufacturers' booklets on.....

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.....

.....

Name: (Please Print).....

Title:.....

Address:.....

..... 4-60

A Listing of Your Business Connection is Important

HERE'S A LIFT

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 PARK AVENUE SOUTH

NEW YORK 16, N. Y.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

Now New York specifies basic lead silico chromate in all coats of rust-inhibitive paint system

You can be *sure* that before any state changes a basic materials specification, evidence must be substantiated indicating superior performance.

Adoption by the New York State Department of Public Works of a rust-inhibitive paint system containing basic lead silico chromate pigment in all coats, is a case in point. The initial evidence for this decision was established by more than ten years of exposure testing by National Lead at its Sayville, Long Island, Test Station.

It was found that even without a finish coat to protect them, primers containing *M50*® basic lead silico chromate pigment endured ten years. And the *M50* pigment, unlike other rust-inhibitors, could be used in intermediate and finish coats as well as in primers.

Then the state obtained its own evidence by painting several bridges with basic lead silico chromate paints. One such job was the renovation of the Albany, New York, bridge shown above. It called for both shop-coat priming of new steel and spot priming of the old. And the intermediate and finish coats were properly applied in the Fall.

Pass field test with flying colors

New York State Engineers were more than satisfied . . . not only with the performance but also with the working properties, tint retention, and color uniformity of the basic lead silico chromate paints. On November 28, 1958, the Division of Construction of the New York State Department of Public Works issued new "Paint and Painting" specifications calling for basic lead silico chromate pigment *in all coats* of the typical rust-inhibitive paint system for highway structures. Today, state after state is following suit.

For information on basic lead silico chromate paints, consult your regular paint suppliers. For technical details on National Lead's basic lead silico chromate, *M50* pigment, contact National Lead Company.

M50® an **oncor**™ *Pigment... A Development of* **National Lead Company**

General Offices: 111 Broadway, New York 6, N.Y.

Built-in, Pre-loaded Shock Absorber In Boom
Cushions the Shock But Doesn't Absorb the Power!

THE DAVIS T-66

IS DESIGNED FOR
9 OUT OF 10
TRENCHING
JOBS

The new self-propelled Davis T-66 is designed and produced to handle 9 out of 10 trenching jobs after an exhaustive survey to users revealed what they wanted.

TRENCHES...AND BACKFILLS!

The Davis T-66 is both a trencher and a backfill machine. For trenching it features positive traction, hydraulic variable speed drive, accurate speed control, hydraulic operated boom, and convenient — virtually effortless — operation. It digs 3" to 4" wide to 66" deep; or 12" wide, 30" deep, and at varying widths and depths in between. Only **two tooth combinations handle all digging widths.** Trenching speed is from 1-ft. to 12-ft. per minute depending upon soil conditions. The low-cost angle backfill blade attaches to the boom and is hydraulically controlled. The T-66 has two-speed drive with instant forward or reverse, powered steering, independent left and right positive clutches and disc steering brakes for maneuverability in backfilling operations. Compact and only 37" wide, every one of its 1350 lbs. is packed with performance. Quality is built in every part. Still, it is priced less than you would expect. ASK ABOUT ITS 90-DAY UNCONDITIONAL GUARANTEE.

THE DAVIS PUP

digs by itself where others won't because it is self-propelled by a positive 6-speed winch drive. Digs 2" to 3" wide to 36" deep or 4" wide, 18" deep.

THE DAVIS HUSTLER

Utility Trailer designed to carry the T-66 and many other items. 2000 lb. capacity, 48" x 84" deck. Has low center of gravity and load equalization regardless of load distribution.

SEND FOR FULLY ILLUSTRATED LITERATURE THAT TELLS HOW THE DAVIS T-66 PAYS OFF FOR YOU in 33 WAYS!

DAVIS MFG. INC.
1517 South McLean Blvd., Wichita 13, Kansas

Please send me literature and name of my distributor for the Davis T-66 _____ Davis Pup _____
Davis Hustler Utility Trailer _____

NAME _____

ADDRESS _____

TOWN _____ STATE _____

T6-60-4

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 53.

For Faster, More Accurate Traffic Line Marking

149 A complete line of hand-propelled, power-propelled, truck-mounted or custom-designed traffic line marking machines, with paint capacities from 10 to 750 gallons, and able to set down single, double or triple lines in one or two colors, is the subject of literature offered by the M-B CORP., DEPT. AC, NEW HOLSTEIN, WIS.

Hazard Warning Lights

150 CARPENTER MFG. CO., 620 BRADLEY ST., SOMERVILLE 45, MASS., offers two complete lines of road block lights: transistorized neon lamp units for highest power and economy types to withstand rugged use and abuse. One-way, two-way and 360° coverage types are available. Illustrated literature gives full facts.

Refuse Collection

151 . . . can be efficient, economical, sanitary. It is 33% more efficient in Phoenix, Ariz., now that the city's collection service is using Hydro E-Z Packs. For full facts, request the booklet, "The Big Squeeze." Write HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO.

Economical Pickup Truck

152 A new light-hauling vehicle has been announced. It delivers 30 mpg, has a 6-foot box, low loading height and room for 3 passengers in the cab. It's also low in cost. For facts on the Falcon Ranchero, write FORD MOTOR CO., TRUCK DIV., P. O. BOX 658, DEARBORN, MICH.

A Sludge Collector

153 . . . new to the Komline-Sanderson line has no machinery or mechanical parts under water and provides sludge scraping and skimming. It is a self-propelled traveling bridge-type structure that does not use cables to pull units, doesn't skew or crab on rails and can attain variable speeds. For facts on Rectu-Line sludge collectors, write KOMLINE-SANDERSON ENGINEERING CORP., PEAPACK, N. J.

For Water of High Quality

154 When you specify Ferri-Floc as a coagulant, you get the advantages of wide pH range, quick flock formation, removal of turbidity, bacteria, manganese and silica, control of taste and odor. For Ferri-Floc data, and a 38-page booklet on all phases of coagulation, write TENNESSEE CORP., 615-629 GRANT BLDG., ATLANTA 3, GA.

Extra Long C. I. Pipe Reduces Installation Costs

155 Cast iron pressure pipe of longer length, which has 10% fewer joints, will lower your pipe laying costs. Griffin-20 is such a pipe. It is available in 4" to 12" diameter size range, with a choice of slip-on mechanical, or bell and plain end joints. For full facts, write GRIFFIN PIPE DIV., GRIFFIN WHEEL CO., COUNCIL BLUFFS, IA.

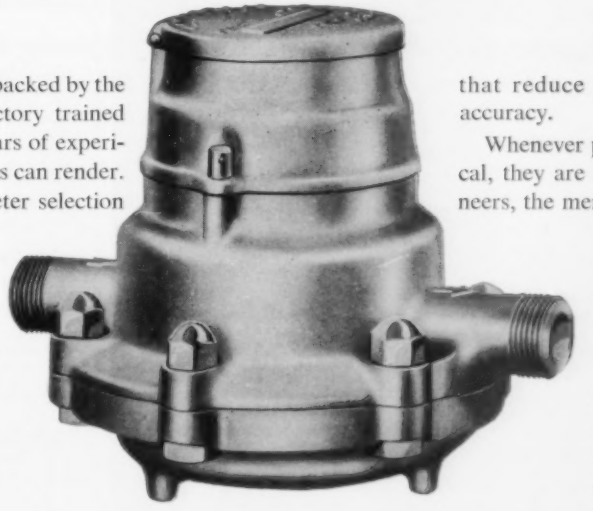
(See page 58 for more Bulletins)

What Every WATER SUPERINTENDENT Should Know About

AMERICAN METERS

...Service

BY FACTORY TRAINED REPRESENTATIVES



American Waters Meters are backed by the kind of service that only factory trained representatives with many years of experience in water works operations can render. Whether it's a problem of meter selection or a mechanical question in the repair department, you will find American Meter representatives extremely cooperative and well prepared to give helpful information or practical instructions. To the service man, they will be glad to demonstrate time-saving methods that reduce costs and maintain meter accuracy.

Whenever problems become too technical, they are referred to the factory engineers, the men who have helped to design American Meters. They are ready to give expert help to any water works superintendent whenever needed.

Complete information on the many cost saving features of American Meters are contained in Bulletin 58. A copy will be gladly mailed to you on request.

BUFFALO METER COMPANY
INCORPORATED
2902 Main Street **Buffalo 14, New York**

FREE catalogs

Write to address given or circle corresponding number on free post card on page 53.

Sand and Gravel for Water Filters

156 When you specify Northern sand and gravel you get clean filtering media that have been carefully graded and feature the chemical and physical properties needed to assure proper filtering in the most meticulous municipal water filtering plant. For details, write NORTHERN GRAVEL CO., P. O. BOX 307, MUSCATINE, IA.

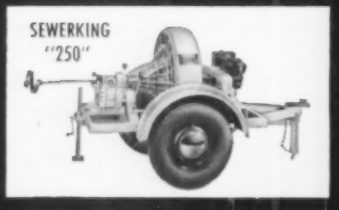
Double Suction Centrifugal

157 Subject of *Bulletin* AY 1850 is the recently announced Type AY horizontally split case pump with mechanical seal, which WEIL PUMP CO., 1530 W. FREMONT AVE., CHICAGO 22, ILL., has designed for leakproof operation in water supply systems, booster service and air conditioning.

Get the Jump on Fires

158 When expanding Tulsa, Okla. found it had outgrown its 25-year-old fire alarm system, it quickly took steps to bring facilities up to date. Now it has a system that alerts precisely the number of companies needed to fight a blaze and permits them to respond to an alarm without having to check its location. For full facts, write THE GAMEWELL CO., 1274 CHESTNUT ST., NEWTON UPPER FALLS 64, MASS.

YOUR BEST BET



O'Brien sewerking —a type to solve your sewer cleaning needs

Whatever your problem come to O'BRIEN for the right, all-power, equipment! Here you will find cable-type rodders, bucket machines, and sectional rod equipment; all designed to *save manpower, work better, and last far longer.* Really trouble-free sewer cleaners that have reduced costs 50%-75% for many cities! Also, a constant factory stock of tools, cutters, solid rods, and cable, to make O'BRIEN your best bet for service!

WRITE TODAY—*send for illustrated literature, information, and current prices on the complete* O'BRIEN *line. No obligation. Convenient demonstrations arranged upon request.*

NATIONWIDE SALES & SERVICE
Telephone ROdney 3-7433

O'Brien MANUFACTURING CORPORATION

DEPT. AC460 5632 NORTHWEST HIGHWAY, CHICAGO 46, ILLINOIS

Mosquito Control a Problem?

159 When used as recommended in fogging concentrates and adulticiding sprays, alone, with DDT or with malathion, heat-stable Lethane 384 delivers a high percentage of knockdown and kills economically. For complete information, write SANITARY CHEMICALS DEPT., ROHM & HAAS CO., WASHINGTON SQ., PHILADELPHIA 5, PA.

It Swings the Load

160 . . . a full 180° and delivers faster work cycles. It accommodates ten quickly interchangeable attachments, offers the operator full visibility and safely handles materials. For full facts on the all-purpose Speed Swing, write PETTIBONE MULLIKEN CORP., 4700 W. DIVISION ST., CHICAGO 51, ILL.

Check Room Operations

161 . . . at swimming pools, parks and recreation areas can be easily put on an automatic self-service paying basis through the Coin-Lok Plan. It can be applied to existing lockers, and there are no lock maintenance worries or replacement costs of lost keys or broken locks. For full facts, write AMERICAN LOCKER CO., INC., DEPT. 44, 211 CONGRESS ST., BOSTON, MASS.

Thorough Sludge Disposal

162 When you flash-dry sludge the Raymond System way, you get controlled drying, incinerated ash that's sterile and free of clinkers, deodorizing of combustion gases as well as sludge holding tanks. For detailed information, write COMBUSTION ENGINEERING, RAYMOND DIVISION, 1132 W. BLACKHAWK ST., CHICAGO 22, ILL.

Prefabricated Marinas

163 Planning a boating facility for your community? Then you'll want full facts on all-steel floating boat marinas that are pre-planned and prefabricated for quick installation and low cost. They include floating docks, piers, boat slips, service patios, ramps, stairways, boat canopies and accessories. Write STANDARD STEEL PRODUCTS MFG. CO., DEPT. A, 2836 S. 16TH ST., MILWAUKEE 15, WIS.

Invite Community Cleanliness

164 You can by strategically placing litter baskets in public areas—at bus stops, in parks and other recreation areas, in alleyways and along highways. For information on durable, weatherproof, galvanized low-cost litter receptacles, write DESIGNERS METAL DIVISION, NORTH AMERICAN CEMENT CORP., 650 HOFFMAN ST., HAMMOND, IND.

Extends Life of Street Sweeper Brooms

165 There's a chemical that is said to double the life of street sweeper brooms, increase efficiency of flusher operation, conserve water, and provide cleaner streets. For full facts, write THE SANFAX CHEMICAL CO., P. O. BOX 604, ATLANTA, GA.

Test Concrete Accurately

166 Latest catalog literature from FORNEY'S INC., TESTER DIVISION, BOX 310, NEW CASTLE, PA., describes Model FT 20-E, designed for testing at the jobsite the compressive strength of cylinders, cores, blocks, beams, brick and drain tiles. It operates electrically or manually, has a permanently mounted electric pump and 25,000-pound load rating.

(See page 60 for more Bulletins)

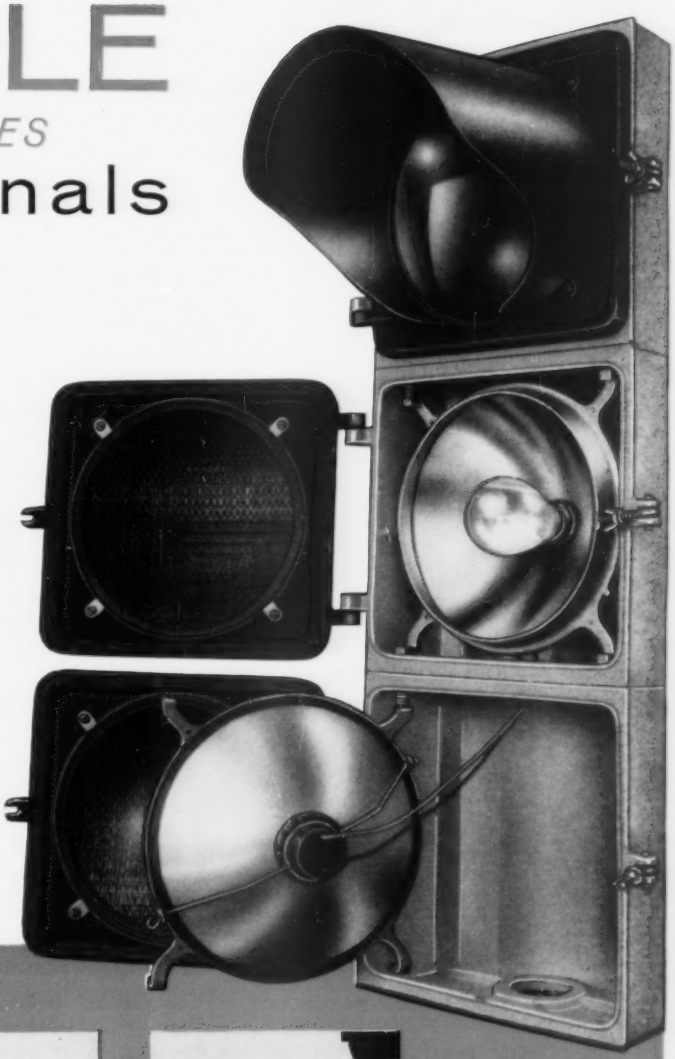
NEW

EAGLE

KB170-KB380 SERIES

traffic signals

OFFER MAXIMUM FLEXIBILITY . . .

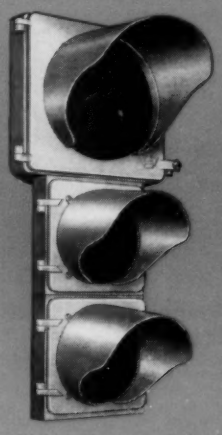


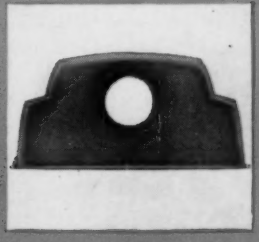
Through EAGLE'S NEW section DESIGN

Eagle's New KB170 Series (8″ signals) and KB380 Series (12″ signals) signal sections are perfectly matched in appearance and may be freely interchanged in assembly. Complete signals have clean, modern appearance with all sections in line, whether made up of all 8″ sections, all 12″ sections, or a combination of 8 and 12 inch sections.

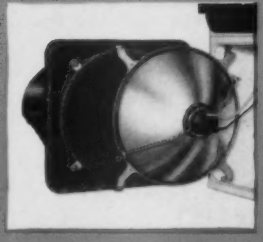
QUALITY FEATURES THAT ASSURE A BETTER SIGNAL

- **Matched Section Design for 8″ and 12″ Signals**
- **All Sections Die Cast Aluminum with Integral Closed Ends — 8″ and 12″ Signals**
- **Neoprene Gaskets Throughout**
- **Silvered Glass or Alzak Reflectors**
- **Anti-Sun Phantom Optical Unit**





All section ends are flat assuring perfect alignment in assembled signals. Serrations provide positive locking of Signal or sections in 5 degree steps.



8″ Signal Fixed Focus Lamp Socket may be rotated for positioning lamp filament. Entire optical unit can be disassembled without tools.

EAGLE SIGNAL COMPANY

A DIVISION OF THE GAMEWELL COMPANY

Municipal Division Dept. AC-460

MOLINE, ILLINOIS

MONEY SAVING catalogs

Write to address given or circle corresponding number on free post card on page 53.

Water Wells and Pumps

167 . . . the subjects of three current catalogs available from LAYNE & BOWLER, INC., MEMPHIS 8, TENN. *Bulletin* No. 100 is concerned with digging a well; *Bulletin* No. 900, with techniques of the gravel wall well; *Bulletins No. 200 and 201*, with vertical turbine pumps for pumping oil (#200) and water.

Sturdy Playground Equipment

168 Current information available from J. E. BURKE CO., P. O. BOX 986, DEPT. 55, NEW BRUNSWICK, N. J., includes literature on a safe, sturdy line of equipment for playgrounds and tot lots and a playground planning and specification file.

Filters—for Pools and Potable Water Supplies

169 Detailed information, prepared to help municipalities of every size with their swimming pool filter problems, is to be found in new technical *Bulletin* 626. And for those interested in diatomite filters for municipal water supplies, there is *Bulletin* 651. For copies of both bulletins, write R. P. ADAMS CO., INC., 202 E. PARK DRIVE, BUFFALO 17, N. Y.

Electric Power—When and Where Needed

170 These portable and standby electric power plants (1,500 to 10,000 watts) are equipped with an Automatic Conserv-er idling control that saves up to 60% in fuel costs. For full facts, request the WINCO full line catalog; write WINCHARGER CORP., DEPT. AC16, SIOUX CITY 2, IA.

Tree Care, Insect Control a Problem?

171 Then you'll want to get up-to-date facts on Dutch Elm disease and data on mosquito control, plus catalogs on all-purpose and high pressure sprayers that will help you deal with these problems effectively. Write JOHN BEAN DIVISION OF FOOD MACHINERY AND CHEMICAL CORP., LANSING, MICH.

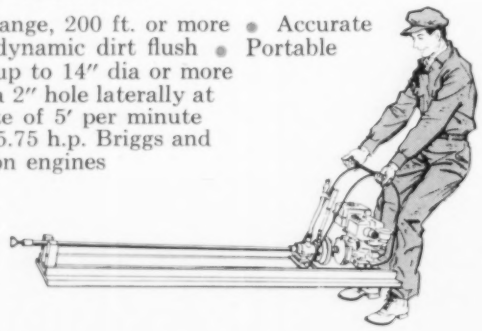
CUT LABOR COSTS 50%
with the
"modern"
EARTH AUGER

FIRST JOB OFTEN PAYS FOR AUGER

Drill under shrubbery, lawns, walks, terraces, instead of causing unsightly damage by trenching. Drill under streets, railroads, highways, etc., without tearing up the pavement or roadbed and disrupting traffic.

ONE-MAN OPERATION

- Long range, 200 ft. or more
- Hydrodynamic dirt flush
- Drills up to 14" dia or more
- Drills a 2" hole laterally at the rate of 5' per minute
- 3 and 5.75 h.p. Briggs and Stratton engines
- Accurate
- Portable



Write, Wire or Call
Modern Products, Inc.
Dept- AM-11, Exeter, Nebraska Phone Exeter 4281

Why Containerize Refuse Collection

172 Many of the general advantages of containerized refuse collection are made evident in a brochure describing the Dempster-Dumpster system. To learn how they can be specifically applied to your community, write for a free survey of your refuse collection system and costs to DEMPSTER BROTHERS INC., DEPT. AC-3, KNOXVILLE 17, TENN.

Matched Outdoor Lighting Equipment

173 For catalog information on floodlights, luminaires, poles and accessories, design-matched for easier installation, peak lighting efficiency, structural strength and balance, write REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

New Grader Bulletin

174 HUBER-WARCO CO., N. GREENWOOD ST., MARION, OHIO, has issued a 16-page bulletin, which describes the construction and features of its new 8-D, 9-D, 10-D and 11-D motor graders. Also available is a 4-page specification sheet on each of the grader models. These note optional equipment available for the graders.

New "Motrac" Crawler Tractor

175 This 59-hp crawler tractor, designed for lowest operator fatigue and highest operator comfort, and equipped with torque converter and instantaneous full-power reversing shuttle, is said to offer the fastest reverse in the industry. It's well-suited for excavating, grading, backfilling and other high-speed jobs. *Bulletin* 1062B gives facts; write MINNEAPOLIS-MOLINE CO., HOPKINS, MINN.

Police Equipment

176 Municipal police departments of every size will find much valuable information in recently issued 76-page *Police Equipment Catalog No. 106* available from SARGENT-SOWELL, INC., P. O. BOX 810, GRAND PRAIRIE, TEXAS.

Single-Stage, Double-Suction Centrifugal Pumps

177 *Bulletin* 1004 stresses advantages, construction, features and performance data of these DeLaval Types L, M and P horizontally split case centrifugal pumps with capacities ranging from 1000 to 20,000 gpm and with heads to 350 feet. For a copy, write DE LAVAL STEAM TURBINE CO., TRENTON 2, N. J.

(See page 63 for more Bulletins)

"THIS '60 CHEVY MAKES EVERYTHING EASIER FOR US—IT'S THE BEST RIDING AND HANDLING TRUCK WE'VE EVER USED!"

Walter Otto, Watertown, Wisconsin, contractor, uses a 1960 Chevrolet Fleetside pickup for a big trucking job. Off the road most of the time on rough terrain at building sites, the truck hauls cement blocks, bricks, concrete, insulation—everything it takes to build a house. "This '60 Chevy does everything for us," Mr. Otto says, "and makes everything easier. It's the best riding and handling truck we've ever used—a lot smoother on the bumps. You're not bounced all over the seat like you are in other trucks. And the big body carries a lot of building supplies, saves trips. The cab's roomier, too. You don't feel all crowded in like you do in other trucks."

■ They're speaking right up, these owners of '60 Chevrolets, talking about a new truck-and-tire-saving ride that leads to shorter trip times, too. Chevy's independently suspended front wheels step right over bumps, virtually eliminate most of the severe impacts that can wear out trucks and tires before their time. You profit by a big savings on maintenance; get a bigger daily work output because these trucks float you over rough roads with fewer slow-downs. New Chevy cabs are built to last longer, boost driver efficiency. There's more leg room, head room and hip room than ever before, new visibility that's greater by more than 26%, new foam-padded seat, new tougher construction features—double-panel roof, box-section door pillars and many more. Efficient power that knows the most about saving money. The standard 235-cu.-in. Thriftmaster 6, for example, America's most widely used truck engine with 135 h.p. and dollar-saving components. Or efficient short-stroke V8 power, optional at extra cost. Look into it for yourself; Chevy's totally new working ability is at your dealer's right now. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1960 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

That's Lock Joint Concrete Pipe!

Whether it be the largest concrete pressure pipe in the world, or a small diameter drainage pipe;
. . . . pipe for the highest heads common to water works practice, or pipe for only nominal pressure or partial vacuum;
. . . . pipe to resist extremes of overburden, or pipe to meet the complexities of industrial or plant piping;
. . . . LOCK JOINT can provide all these, and more.

You will also find it a dependable, durable, maintenance-free pipe of sustained high carrying capacity which is backed by a company with over a half century's experience in the development and production of concrete pressure, sewer, culvert and subaqueous pipe.

LOCK JOINT PIPE CO.
East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Feeds Dry Chemicals to Water, Sewage Treatment Systems

178 Catalog data on Vibra-Flow dry feeder machines explains why they enable closer control of material flow, eliminate waste, reduce labor cost, and provide an efficient, dependable method of feeding dry chemicals to water and sewage treatment systems. Write SYNTRON CO., 430 LEXINGTON AVE., HOMER CITY, PA.

Improved Tampers

179 Tamping force of the 1960 line of Jay tampers has been increased as much at 50%; travel speed, 100%. Rate of compaction is said to be 100 cubic yards of earth per hour in 6-inch lifts. Handling and control are said to be easier, and a new plate contour is said to promise better, faster tamping in heavy soils. For literature, write JAY DIV., J. LEUKART MACHINE CO., INC., COLUMBUS, OHIO.

Sewer Cleaning Equipment

180 A new catalog—No. 59-2—has been issued by FLEXIBLE INC., 3786 DURANGO AVE., LOS ANGELES 34, CALIF., on its Truck-Loder Bucket Machine, which loads sewer deposits directly into a truck and can increase sewer-cleaning capacity by as much as 40%.

Underwater Lights for Swimming Pools

181 These lights can convert your municipal swimming pool into a safer, more useful and more enjoyable recreation facility. They are made in four different styles to meet all pool requirements and are equipped with brass or brass-chrome-plated frames and special heat-resisting lenses. *Bulletin* 736A gives full facts. Write EVERSON MFG. CORP., 214 W. HURON ST., CHICAGO 10, ILL.

Tailgate Spreader Works the Year 'Round

182 This tailgate spreader can be employed for ice control in winter, ashing snow-covered streets, sealcoating and soil-stabilization of secondary roads. Full spread width is 8 feet. With it hand-patching and streaks in sealcoating are eliminated. For full facts on Rollgate, write GOOD ROADS MACHINERY CORP., MINERVA, OHIO.

Diesel-Powered Electric Plants

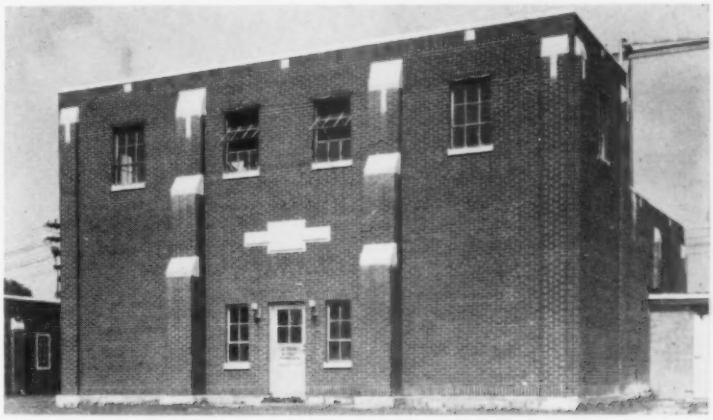
183 A new 8-page booklet announces a new series of 2000-, 5000-, and 7500-watt air-cooled diesel electric plants, engineered for the construction market. The engine's direct injection combustion system assures fuel economy and quick, cold weather starting. For a copy, write DIESEL TRIO, KOHLER CO., KOHLER, WIS.

Illustrated Tractor Catalog

184 New 12-page *Catalog* UT-111, which covers the Allis-Chalmers "D" series utility tractor line and its matched equipment, can be obtained from the FARM EQUIPMENT DIVISION, ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS.

(See page 64 for more Bulletins)

Use Northern Gravel for Rapid Sand Filter



This is the Water Softening Plant at Evansville, Wisconsin. Another of the many, many such plants throughout the United States that have used filtering sand and gravel from the Northern Gravel Company.

Filter Sand Specifications

are carefully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality

of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel

supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 45 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company

Box 307 **Muscatine, Iowa** **Phone: AMherst 3-2711**

"A STRAIGHT LINE IS THE SHORTEST DISTANCE BETWEEN TWO POINTS."

Broadway Maintenance's New Electronic Parking Meter Coin Processing System is The Shortest Line Between Your Parking Meters And The Bank.

ELECTRONIC PARKING METER COLLECTION ON THE MOVE

Imagine! Coins whisked from your parking meters by high speed vacuum, travel at 85 miles-per-hour into the amazing computer "room" of the new Broadway Maintenance coin processing truck.

In this sealed "room"—without the human element present—your meter collection is sorted and electronically counted. From our unique computer, the coins fall into locked vaults, by denomination.

Delivery to your bank is under security conditions that prove out your meter collections as no other system can.

Interested? Complete details of the Broadway Maintenance Parking Meter Coin Processing System await you in our richly-illustrated brochure. Yours free for the asking; mail the coupon below.

BROADWAY MAINTENANCE CORP.

PARKING METER DIVISION • 22-09 BRIDGE PLAZA NORTH • LONG ISLAND CITY 1, N. Y.

NAME _____ TITLE _____

ADDRESS _____

CITY _____ STATE _____

CATALOGS for Improved Municipal Services

Write to address given or circle corresponding number on free post card on page 53.

Instant-Reverse Utility Rig

185 . . . loads, cleans-up, backfills, landscapes and does numerous other municipal maintenance chores. It moves in and out of congested areas with ease, speeds up cycle time between load and dump. Literature on the compact, versatile M-F 204 with power-matched loader and backhoe can be obtained from MASSEY-FERGUSON INDUSTRIAL DIVISION, BLOCK 1000 S. WEST ST., WICHITA 13, KAN.

New Rotary Power Mower

186 Here's a mower with toroidal-shaped base and 22-inch cutting blade that allows 5 cutting heights. It is said to offer healthier, more beautiful lawns with less work, virtually eliminate raking and provide an excellent degree of safety. It is the FMC Orbit-Air and has just been introduced by FOOD MACHINERY & CHEMICAL CORP., SOUTH MILWAUKEE, WIS.

Kills Weeds

187 Here's a weed killer that stops weed troubles before they start. Many cities use it to clear weeds from grounds around buildings, parking areas, driveways, road shoulders, rights-of-way and vacant lots. For full facts on Zep R-59, or to arrange for a free demonstration, write ZEP MFG. CORP., 1310 SEABOARD INDUSTRIAL BLVD., ATLANTA, GA.

Protective Fencing

188 Steel chain link fence fabric, galvanized *after* weaving for extra life, and offering maximum security at low initial cost and virtually no annual upkeep, is the subject of literature, available from ANCHOR FENCE, 6561 EASTERN AVE., BALTIMORE 24, MD.

Water Storage Tanks

189 Planning a new water storage facility for your community? *Catalog* A-40 contains details and specifications on two kinds: Waterspheres, available in capacities from 25,000 gallons to 250,000 gallons, and Waterspheroids, with capacities up to 500,000 gallons. For a copy, write CHICAGO BRIDGE & IRON CO., 332 S. MICHIGAN AVE., CHICAGO 4, ILL.

Want An Ice Skating Rink?

190 But don't know how to finance it without increasing taxes? Knowing the "Greenville Story" might help. It tells how a town of 10,000 people built a $70,000 outdoor ice rink and warming house and completely financed it without taxes. For details, write YORK CORP., SUBSIDIARY OF BORG-WARNER CORP., 4204 S. GRANTLEY RD., YORK, PA.

Viking Roller Blades

191 For year 'round use, these roller blades can plow snow and spread sand or salt on drives and walks, all in one operation. IH dealers now furnish these blades with I-240, I-340 and I-460 Utility tractors, as well as Farmall Cub and International Cub Lo-Boy tractors, for all types of lawn building and grounds maintenance. Write INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

(See page 66 for more Bulletins)

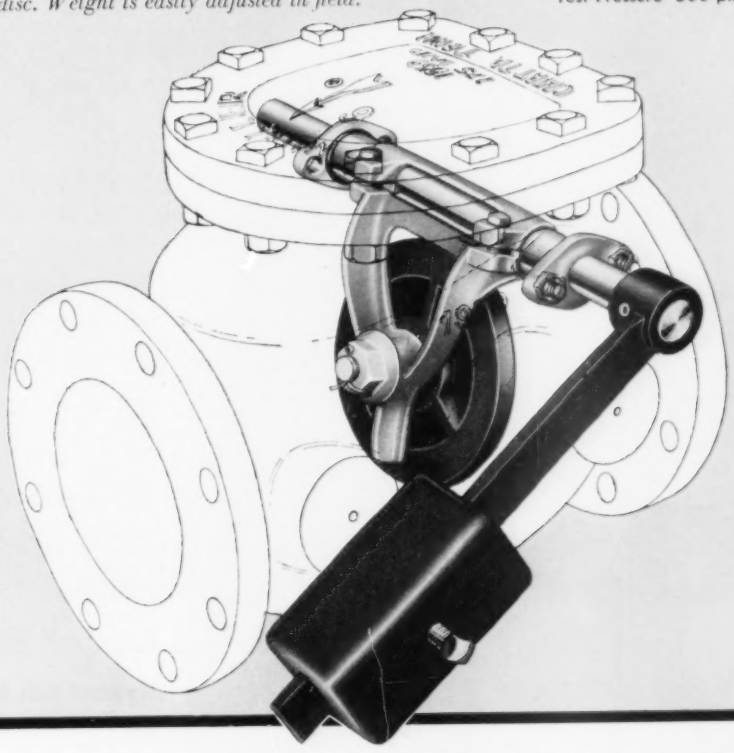
MUELLER® Check Valves

heavy duty disc assembly that lasts and lasts!

Lever and Weight Type

. . . ideal for use in pump suction or discharge lines to cushion and reduce slamming and hammering. Lever may be positioned to speed up or slow down closing of disc. Weight is easily adjusted in field.

Iron Body — Fully Bronze Mounted
Bronze Seat Ring
Bronze Disc Ring or Rubber Faced Disc
Flanged, Screwed or Hub Ends
Working Pressure: 175 p.s.i.
Test Pressure· 300 p.s.i.



All working parts of these new Mueller Swing Type Check Valves are heavily made to assure long service life and dependable operation *without maintenance.*

A heavy stainless steel hinge pin is used on all lever and weight type (shown) and lever and spring type check valves. This pin is extended through the hinge plugs to permit the lever to be used on either side of the body. An "O" ring on the plug prevents leakage around the pin.

The plain type, without lever, weight or spring, uses a new combined hinge pin and plug which is securely and accurately held to the body by studs and nuts. An "O" ring positively seals the plug to prevent leakage.

Large, wear-resistant bearings and a full-width clapper arm hinge, used in all types, accurately and rigidly align the disc to eliminate chatter and vibration.

These new, heavy duty check valves have been specifically designed for repeated opening and closing applications in water works pumping stations, water filtration plants, sewage treatment plants and general industrial plants. They are suitable for horizontal or vertical installation on water or oil lines.

Write for specifications.

The many exclusive features of these new check valves are typical of the attention to detail in research, design and engineering that becomes a part of every Mueller product.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles;
In Canada: Mueller, Limited, Sarnia, Ontario

FREE catalogs

Write to address given or circle corresponding number on free post card on page 53.

Trees for Streets and Parks

192 A whole new family of trees have been developed. Each variety has different characteristics of form, color and growth and each is adaptable to almost any soil or climate. For details on these new trees that will help you better meet your landscaping needs, write THE COLE NURSERY CO., PAINSVILLE, OHIO.

Tractor Loader Attachments

193 The several pieces of equipment described in latest literature from MARS EQUIPMENT CO., INC., 5209 W. BROADWAY, MINNEAPOLIS 22, MINN. can be attached to tractor loaders. They include a sweeper that sweeps, picks up and loads; an angle broom and a bucket clam, as well as a sprinkler system.

Marina Equipment

194 Dock brackets, mooring bars, leveling jack, marine steps, spring board, boat canopy, pontoon boat kit, ladder, driving cap and float brackets are among the products in the "Perma-Dock" marine specialties line described in literature offered by CENTRAL MACHINE WORKS CO., 1234 CENTRAL AVE., MINNEAPOLIS 13, MINN.

Protective Coatings Catalog

195 Special feature of the new 16-page Derusto protective coatings catalog is a Selector Guide, which evaluates technical properties of various coatings and aids in correctly determining their most effective and economical use. Paint chips to facilitate color matching also are included. Write MASTER BRONZE POWDER CO., INC., 538 W. STATE ST., CALUMET CITY, ILL.

Equipment for Recreation Areas

196 AMERICAN PLAYGROUND DEVICE CO., ANDERSON, IND., has issued a new catalog. It includes a variety of safe, serviceable equipment for park, picnic, playground and swimming pool areas. Also available is a descriptive folder on the "Jim Patterson Lifetime" aluminum diving board.

Vibratory Power Roller

197 *Bulletin* 40 gives complete information and detailed specifications on the Model 125-V "Vibra-Hopper" a new vibratory power roller that can be used as a 1-ton static roller for black top or an 8-ton vibratory roller for base rolling. For a copy, write LITTLEFORD BROS., INC., 457 E. PEARL ST., CINCINNATI 2, OHIO.

Screen Pipe for Wells

198 A new 8-page catalog describes screen pipe for water, gas and oil wells and gives specifications for the various types, which include "more area" slotted screen pipe, vertical slotted and drilled hole wire wrapped screen, ribbed-type wire wrapped screen and prepacked gravel pack screen. Write EMSCO SCREEN PIPE CO., P. O. BOX 14446, HOUSTON 21, TEXAS.

Maintenance-Free Fencing

199 Here's a product that's sturdy, rust-proof, long-lasting and totally maintenance-free. With it, first cost is last cost. The numerous municipal applications of Nichols aluminum chain link fencing are described in a well-illustrated 16-page booklet, available from NICHOLS WIRE & ALUMINUM CO., DAVENPORT, IA.

Natural Gas Engines

200 An illustrated 8-page booklet gives specifications and fuel consumption curves of the complete line of Caterpillar natural gas engines for all applications. Job stories illustrating actual performance in sewage disposal, electric, standby and other installations are included. For *Booklet* 20173, write INDUSTRIAL ENGINE PLANT, CATERPILLAR TRACTOR CO., PEORIA, ILL.

For Better Lawn Areas

201 *Forms* 400, 401, 403 and 404 describe and give specifications for new landscaping equipment that will help you build vigorous, deep-rooted turf on municipal green areas and better maintain them. For copies, write RYAN LANDSCAPING EQUIPMENT CO., 871 EDGERTON ST., ST. PAUL 1, MINN.

Smooths Patches, Seals Surface, Bonds Patch

202 Latest literature from THE CHARLES MACHINE WORKS, INC., 1959 W. FIR AVE., PERRY, OKLA., describes the 'Hot Witch' Roller, a small asphalt paving device that uses the principle of heat in applying patches in asphalt paving (both cold and hot mix) and provides compaction equal to 5 tons dead weight.

(See page 68 for more Bulletins)

Way back in 1960 before citizens carried their own personal litter disintegrators, United waste receptacles served every major city . . . in streets, schools and institutions.

Of course, your community may not be that advanced—so it may be a good idea to specify United waste receptacles for the time being. United waste receptacles really last and cost so little.

- engineered in heavy gauge furniture steel
- electrically welded
- bonderized for rust-proof performance
- baked double enamel finish
- whisper-quiet performance

TAKE ME TO YOUR "LITTER"

WRITE FOR THE COMPLETE UNITED CATALOG TODAY.

UNITED METAL CABINET CORP.

UNITED

8 East 36th St., New York. Factory: Pottsville, Pa.
Midwest Sales Office: 666 Lake Shore Drive, Chicago, Ill.
West Coast Distributor: Shore-Calnevar, Inc.,
7701 East Compton Blvd., Paramount, Calif.

Carl Madison, Vice President, tells you

What's new in disc meters

In basic operating principles and design, there's really very little new in disc meters. But in all Rockwell disc meters—Arctic and Tropic types—there are a host of engineering advances, that put new and better performance into this long accepted method of measurement.

Just consider these facts. Rockwell disc meters alone are made with costly *stainless steel trim* to prevent corrosion, enhance durability. Their construction includes a *patented "O"-Ring stuffing box* which stops leaks, binds, troubles and servicing expense. Another Rockwell extra is the *large red center test hand* furnished as standard on all registers. This big, easy-to-follow test hand provides a closer check on accuracy; offers proof-positive when leaks occur on consumer's premises.

We've even made repair and maintenance of Rockwell disc meters easier for you. Parts are packaged in cartons that stack on your shelves. These cartons are accurately labeled for convenience in inventory control and re-ordering.

For all these good reasons, Rockwell Arctic and Tropic meters are your best disc meter buy. Write today for latest bulletins. Rockwell Manufacturing Company, Dept. 401WD, Pittsburgh 8, Pa. In Canada: Rockwell Manufacturing Company of Canada, Ltd., Box 420, Guelph, Ontario.

DISC TYPE WATER METERS

another fine product by

ROCKWELL

Spring...

now is the time to properly light your construction hazards

USE THE

DIETZ 3 WAY HAZARD WARNING SYSTEM

LANTERNS TORCHES VISI-FLASH

Use Dietz Visi-Flash Lights to alert the oncoming driver. Brightest, safest, most trouble-free flashers on the market. Warn. "Danger Ahead" for up to 1500 hours without changing batteries.

Use Dietz Lanterns to locate hazard in relation to driver's position. Show exact location, shape, extent, and boundaries of hazard area. Burn up to 100 hours.

Use Dietz Torches to guide driver around the hazard. Fully illuminate the danger in every weather. Burn up to 48 hours on low cost kerosene

Go DIETZ and you go Safely

It's Spring . . . more highway projects . . . more traffic, too!

On your jobs . . . play it safe. Proper lighting of your highway hazards can save you many a headache – as well as money and your reputation.

***NEW!* DIETZ HAZARD WARNING PLANNER**

A Practical On-the-Job Tool! Quickly and easily shows how, when, and where to use each type of warning light for maximum safety under all weather conditions and all types of roads and speeds.

Send $1.
for each Planner — personalized with your name

R. E. DIETZ COMPANY
100 Leavenworth Ave. Syracuse, N. Y.

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Clears Weed-Choked Waters

203 Recent advances in aquatic herbicides make it possible to clear entire lakes or specific areas of weeds safely, free them of unpleasant odors, make them safe for swimming and better for boating. For information on a new chemical method that clears weed-choked waters and restores natural balance, write ALLIED BIOLOGICAL CONTROL CORP., 19 MILK ST., BOSTON, MASS.

Broader Protection for Municipal Equipment

204 Now you can get virtually comprehensive insurance protection for your municipally-owned equipment —from snow removal equipment to school band instruments and uniforms. "All Risks" policies afford you this broader protection. For complete information, write AETNA CASUALTY AND SURETY CO., STANDARD INSURANCE CO., DEPT. AC-4, HARTFORD 15, CONN.

Waste Cans and Containers

205 Extra-heavy serviceable galvanized waste cans, heavy-duty steel dollies to wheel them about, and 18-gauge steel service containers for hospitals and institutions are described in catalog literature, available from THE F. H. LAWSON CO., CINCINNATI 4, OHIO.

Street Sweepers

206 There's a Wayne street sweeper for big jobs or small jobs, for municipalities of every size. They are gas, electric or LPG-powered, sweep in widths from 30" to 10', have capacities from 3 cubic feet to 4 cubic yards. For details, ask WAYNE MFG. CO., 2434 E. LEXINGTON ST., POMONA, CALIF., for its *Sweeper Catalog*.

If Your Emergency Vehicles Can't Afford to Be Stuck

207 . . . then you'll want to equip them with limited slip differentials that shift power instantly to the rear wheel with greater traction. A free booklet describes the benefits of this positive traction differential and how it can help your police and fire department cars, service cars and light utility trucks. Write DANA CORP., TOLEDO 1, OHIO.

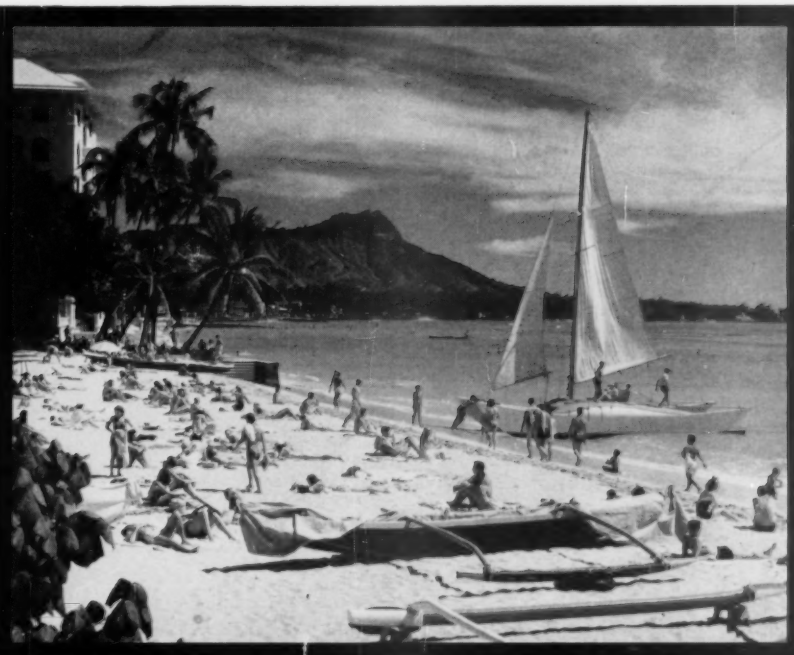
Aluminum Glass Covers for Sewage Treatment Plants

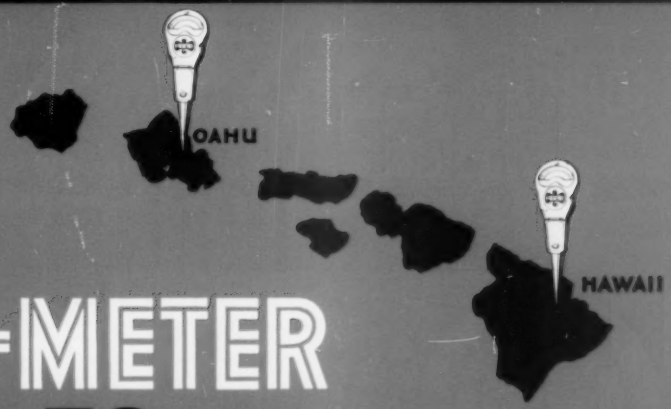
208 These covers are recommended for sludge drying beds, trickling filters and settling tanks, and to increase efficiency and eliminate nuisances. *Engineers' Service Sheets* AC-360 contain details, specifications and recommendations for every job request. For a copy, write LORD & BURNHAM, DIV. OF BURNHAM CORP., IRVINGTON, N. Y.

Where's the Key?

209 It will be just where it should be, if your key control system is built around Telkee, designed to keep keys from straying, being stolen or lost and flexible enough to fit every size and type of application. For complete information, send for the *Telkee Booklet*. It can be obtained from P. O. MOORE, INC., GLEN RIDDLE 25, PA.

(See page 72 for more Bulletins)





PARK-O-METER

unanimous in the 50th state

. . . with the recent purchase of 2,770 Park-O-Meters by the city of Honolulu, every parking meter in the Island State is now a Park-O-Meter.

Whatever a parking meter may be expected to do, Park-O-Meter does it better!

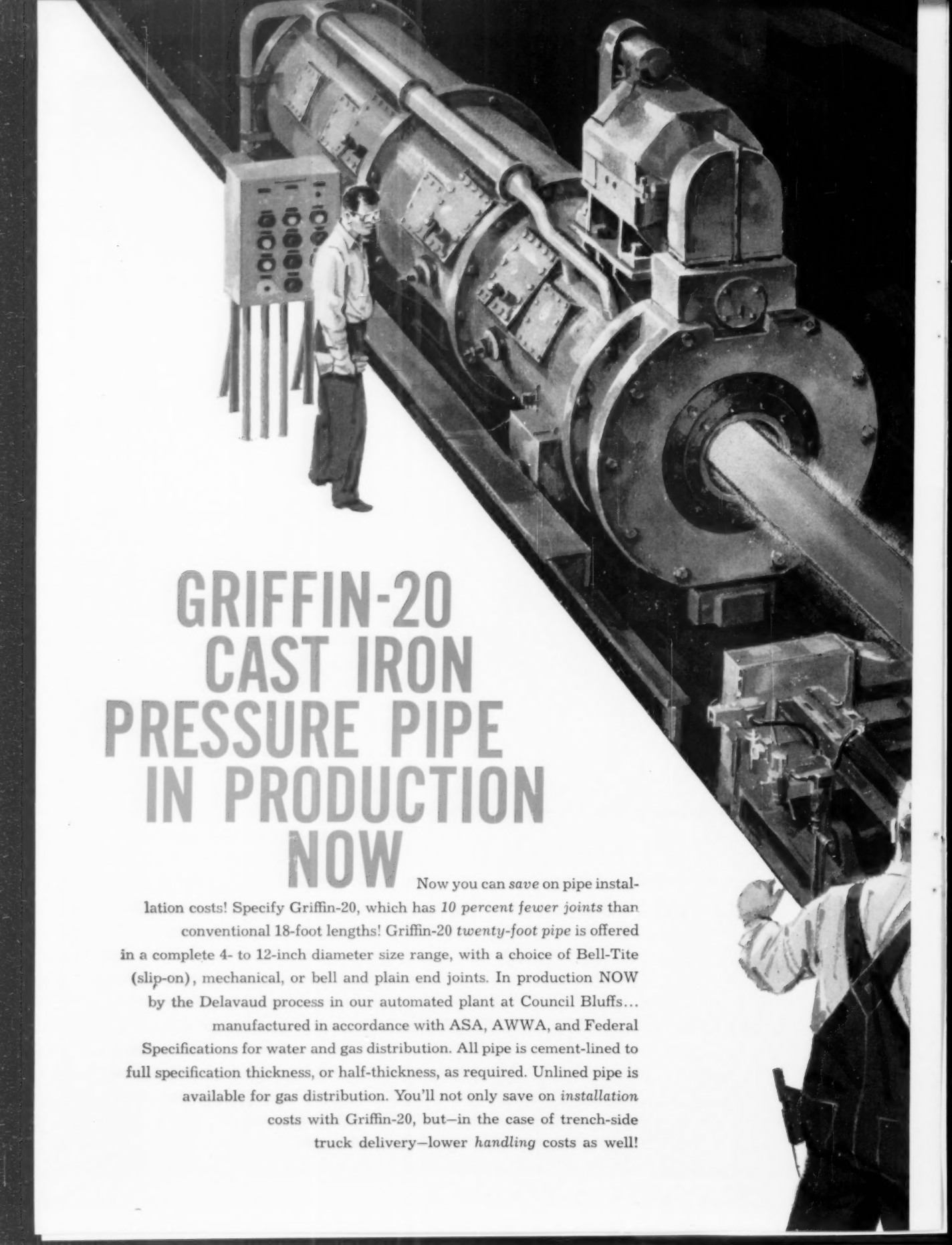
There is a Park-O-Meter type to meet every specification. Ask for a demonstration or a trial installation.

Magee-Hale

PARK-O-METER COMPANY

OKLAHOMA CITY, OKLAHOMA

Factories in U.S.A., CANADA, ENGLAND



GRIFFIN-20 CAST IRON PRESSURE PIPE IN PRODUCTION NOW

Now you can *save* on pipe installation costs! Specify Griffin-20, which has *10 percent fewer joints* than conventional 18-foot lengths! Griffin-20 *twenty-foot pipe* is offered in a complete 4- to 12-inch diameter size range, with a choice of Bell-Tite (slip-on), mechanical, or bell and plain end joints. In production NOW by the Delavaud process in our automated plant at Council Bluffs... manufactured in accordance with ASA, AWWA, and Federal Specifications for water and gas distribution. All pipe is cement-lined to full specification thickness, or half-thickness, as required. Unlined pipe is available for gas distribution. You'll not only save on *installation* costs with Griffin-20, but—in the case of trench-side truck delivery—lower *handling* costs as well!

Strategically located to effect savings in shipment *time* and *money*, the Griffin-20 Council Bluffs plant (95,000 square feet of buildings on 19 acres of land) is at the *transportation hub* of the Plains States. Pipe shipments reach their destinations in record time because the site is served by nine major railroad carriers, in addition to truck carriers. *For the first time, many areas can receive truck delivery alongside trench.* Griffin-20's Council Bluffs plant is the *logical* source for cast iron pressure pipe users throughout the Midwest and Rocky Mountain states.

GRIFFIN PIPE DIVISION

Griffin Wheel Company · Council Bluffs, Iowa

SALES OFFICES: Chicago · St. Paul · Kansas City, Kansas · Denver

GRIFFIN PIPE DIVISION
COUNCIL BLUFFS

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 53.

Reline Pipelines in Place

210 For information on how you can rehabilitate cast iron, steel, concrete and wrought iron pipelines down to 4" without removing the pipe and without interrupting traffic or inconveniencing the public, write PIPE LININGS INC., 2414 E. 23rd ST., WILMINGTON, CALIF.

Incinerator Stokers

211 A 6-page folder gives facts and construction aspects of bar & key-type stokers and chain grate stokers, which can be designed and built in any size. Municipal installations are illustrated and features that assure durable and economical operation discussed. Write ILLINOIS STOKER CO., ALTON, ILL.

New Fluorescent Luminaire

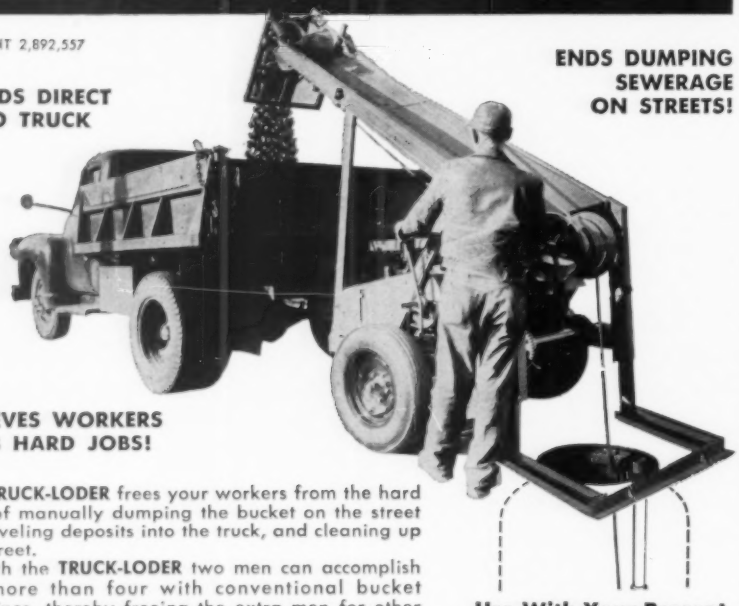
212 *Bulletin* 125 gives complete information on the first of a series of new fluorescent luminaires—Metropolitan Style 72—designed for business thoroughfares, shopping centers, highways, turnpike interchanges, etc. For a copy, write PHILADELPHIA ELECTRICAL & MFG. CO., 1200-36 N. 31st ST., PHILADELPHIA 21, PA.

IF YOU DON'T HAVE A TRUCK-LODER
Your Sewer Crew is WORKING TOO HARD!

PATENT 2,892,557

LOADS DIRECT INTO TRUCK

ENDS DUMPING SEWERAGE ON STREETS!



RELIEVES WORKERS OF 3 HARD JOBS!

The **TRUCK-LODER** frees your workers from the hard jobs of manually dumping the bucket on the street — shoveling deposits into the truck, and cleaning up the street.

With the **TRUCK-LODER** two men can accomplish far more than four with conventional bucket machines, thereby freeing the extra men for other important sewer maintenance work.

Users report the elimination of time-consuming operations has increased sewer-cleaning capacity by 40%. They agree that **TRUCK-LODER Bucket Machines exceed all performance estimates.**

Your Flexible representative will be glad to give you facts and figures at your convenience.

Use With Your Present Machines

Use Truck-Loders on the dumping end and your regular machines on the Pull-In end. Net result—two complete, modern Truck-Loder units.

★★

FLEXIBLE INC.

3786 DURANGO AVE., LOS ANGELES 34, CALIF.
1005 SPENCERVILLE ROAD, LIMA, OHIO
415 SOUTH ZANGS BLVD., DALLAS, TEXAS

★★

For a Cleaner Community

213 Waste receptacles conveniently placed on streets and in parks suggest and invite use—and they do a good job of letting the public help you achieve a cleaner city. For full facts on sturdily constructed street and park baskets, write NORWICH WIRE WORKS, INC., 159 STATE ST., NORWICH, N. Y.

Dig Neat, Narrow Trenches

214 . . . 3" wide to 24" deep, in curved or straight lines, and at the rate of 1½ to 17 fpm to take pipe, tubing, cable or conduit for utility service lines and sprinkler systems. You can with the POW-R-SPADE, a one-man operated trencher that saves up to 90% on labor. Write STAMPINGS, INC., 321 24TH ST., ROCK ISLAND, ILL.

Water Filter Sands and Gravel

215 When you specify Red Flint sands and underdrain gravel you get a high silica content product, uniformly graded within close limits and available in large as well as small sizes and processed to exacting specifications. For full facts, write EAU CLAIRE SAND & GRAVEL CO., EAU CLAIRE, WIS.

Vacuum-Clean Streets

216 "City Slicker" sucks up and separates light bulky litter, dry sand and light, fine dust, cleaning a 6½-foot path by means of vacuum and air power. It's a useful unit for littered street gutters, parking lots, shopping centers and playgrounds. For descriptive literature, write TARRANT MFG. CO., 23 JUMEL PLACE, SARATOGA SPRINGS, N. Y.

Speed Sealcoating Operations

217 Have you seen the current catalog from SWENSON SPREADER & MFG. CO., LINDENWOOD, ILL.? It describes material spreaders that operate at speeds up to 30 mph, are available in various sizes to fit any dump truck box, and spread salt, sand, gravel, calcium chloride and cinders in narrow strips or full traffic lanes, in steady flow or intermittently.

They Guide Traffic

218 Plastic traffic cones that won't crack, tear or break, never need painting and come in solid yellow or Safe-T-Glo colors, and all-rubber Safe-T-Cones that can be painted standard red and yellow or reflectorized are described in literature, available from RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

Embossed Traffic Signs

219 The current catalog from GRIMM STAMP & BADGE CO., 8105 ROSALIE, ST. LOUIS 17, MO., describes and illustrates a full line of embossed aluminum or steel traffic and street name signs, posts and brackets, as well as lightweight hand signs for schools, utility and construction crews.

Fire Protection Systems

220 *Form* SM-25-160 (A. I. A. File No. 31-I-31) presents a full line of automatic fire detection, warning, and sprinkler supervisory units for buildings of all types. For a copy, write NOTIFIER CORP., LINCOLN, NEBR.

Heat and Remix Stockpiled Asphalt

221 A new 4-page, fully-illustrated brochure describes how you can heat and remix stockpiled asphalt with the handy HEAT-A-MIX tailgate asphalt mixer. For a copy, write WYLIE MFG. CO., INC., BOX 7086, OKLAHOMA CITY 12, OKLA.

(See page 75 for more Bulletins)

REVOLUTIONARY ADVANCE IN SEWER LINE MAINTENANCE

ND-25 SEWER SOLVENT FROM

NATIONAL CHEMSEARCH®

UNCLOGS SEWER LINES DISSOLVES GREASE, ROOTS, CELLULOSE

Activated by liquid in your lines, National's ND-25 generates heat and agitation when poured into a manhole, removing and loosening debris. ND-25 will saponify and emulsify greases and oils... digest roots, paper and other material containing a high percentage of cellulose. More, it's colored for extra convenience. Add ND-25 to strategic manholes and see its effectiveness throughout your sewer line system by observing traces of this color in other areas of the system.

For on-the-spot assistance, see your National Chemsearch representative. Well trained, experienced in dealing with your kind of problems... backed by one of the finest research staffs in the industry.

Leader in Chemical Research — Since 1919

NATIONAL CHEMSEARCH CORP.
DALLAS • LOS ANGELES
ST. LOUIS • NEW YORK

ELIMINATE YOUR WATER TREATMENT PROBLEMS WITH...

ferri-floc

FERRIC SULFATE

WATER TREATMENT
Efficient Coagulation of Surface or Well Water—Effective in lime soda-ash softening—Adaptable in treatment of all industrial applications.

SEWAGE TREATMENT
Coagulates over wide pH ranges and provides efficient operation regardless of rapid variations of raw sewage—Very effective for conditioning sludge prior to vacuum filtration or drying on beds.

THE COAGULANT WITH THE PLUS FEATURES . . .

Excellent Taste and Odor Control
Increased Filter Runs
Coagulation Over Wide pH Range
Rapid Floc Formation ***Turbidity Removal***
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FREE BOOKLET Let us send you without charge, a 38-page booklet that deals specifically with all phases of coagulation—just send us a postal card.

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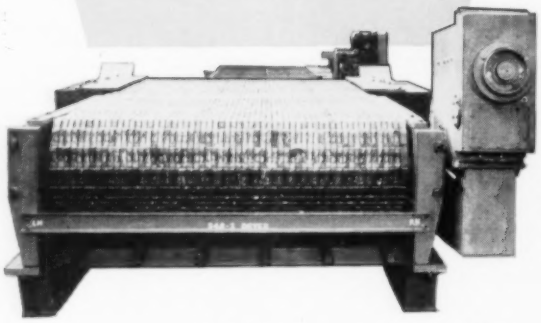
615-629 GRANT BUILDING, ATLANTA 3, GEORGIA

ILLINOIS INCINERATORS
with Cast Steel Links
Offer
Trouble Free Performance
High Efficiency



Testing incinerator before installation in New York City's Gansevoort Refuse Disposal Plant.

Cast steel links on both the bar/key type and chain grate models provide less brittle grate surface than ordinary cast iron, with greater resistance to heat and the abrasive qualities of some refuse.

The ORIGINAL overlapping link or key design eliminates the possible clogging or damaging of links — reduces sifting of material through grate.

- Any desired number of tuyeres for better zone control
- Easily accessible take-up mechanism
- Automatic feed — No heavy stoking or cleaning of fires
- Continuous discharge of decontaminated residue

All Illinois Incinerators are customized to your needs . . . Built in any size desired up to 24 feet wide. You specify, we satisfy.

Supervised Assembly at Your Plant
Write Today for Colorful Brochure

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Mfrs. of: Incinerators • Industrial Stokers • Sintering Machines

FREE catalogs

Write to address given or circle corresponding number on free post card on page 53.

Fogs Insects to Death

222 An illustrated folder gives details and user comments on an insecticidal fog applicator that destroys on contact mosquitoes, flies and other insect pests. TIFA operates on propane or gasoline and uses insecticides in solution, emulsion, or suspension. For literature, write TODD SHIPYARDS CORP., PRODUCTS DIVISION, COLUMBIA AND HALLECK STS., BROOKLYN 31, N. Y.

Speeds Up Brush Disposal

223 A powerful, new brush chipper handles tree limbs up to 8 inches in diameter. It can produce either small or large chips and features a built-in blower that regulates direction and distance of chips. It is one in a complete line of chippers described in catalog literature available from MITTS & MERRILL, 1003 S. WATER ST., SAGINAW, MICH.

Information on Rollers

224 . . . for economical patch rolling or for complete surfacing jobs is available to street construction and maintenance crews from THE GALION IRON WORKS & MFG. CO., DEPT. A-40, GALION, OHIO. It includes pertinent data and specifications on tandems, 3-wheel, pneumatic-tire and trench rollers and towing attachments.

Treat with Rock Salt

225 Gravel roads treated with rock salt tend to stand up under heavy traffic and through hard winters. Surface breakup and aggregate loss is usually less. A simple, practical method of salt-treating gravel roads is described in the booklet, "Better Roads," available from INTERNATIONAL ROCK SALT COMPANY, DEPT. AC-460, CLARKS SUMMIT, PA.

Jobsite Water Coolers

226 These sanitary units keep drinking water pure and cooler longer, and they help reduce "water-break" downtime. For facts and descriptive literature, write HORTON EQUIPMENT CO., P. O. BOX 2611, HOUSTON 1, TEXAS.

Cast Iron Pipe

227 Here's a pipe of rugged design high corrosion resistance, with bottle-tight joints able to withstand severe pressures, and cement lining that assures full flow of water for a very long time. For full facts, write CAST IRON PIPE RESEARCH ASSN., THOS. P. WOLFE, MANAGING DIR., 3440 PRUDENTIAL PLAZA, CHICAGO 1, ILL.

Traffic Line Markers

228 . . . are the subject of a 16-page catalog that gives details and specifications on all models of Mark-Rite traffic line striping machines. It also tells how to select the proper line marker for your job. For a copy, write UNIMASCO, INC., UNIVERSAL MFG. & SALES CO., 424 W. REDONDO BEACH BLVD., GARDENA, CALIF.

New Barricade Flash

229 It has a big beam, produces approximately 2,000 hours of continuous flashing from two 6-volt batteries, has a flash frequency of 72 times per minute, is transistorized, and comes equipped with bracket for attaching to barricade. For full facts on Transista Flash Model 410T, write U-C-LITE MFG. CO., 1063 W. HUBBARD ST., CHICAGO 22, ILL.

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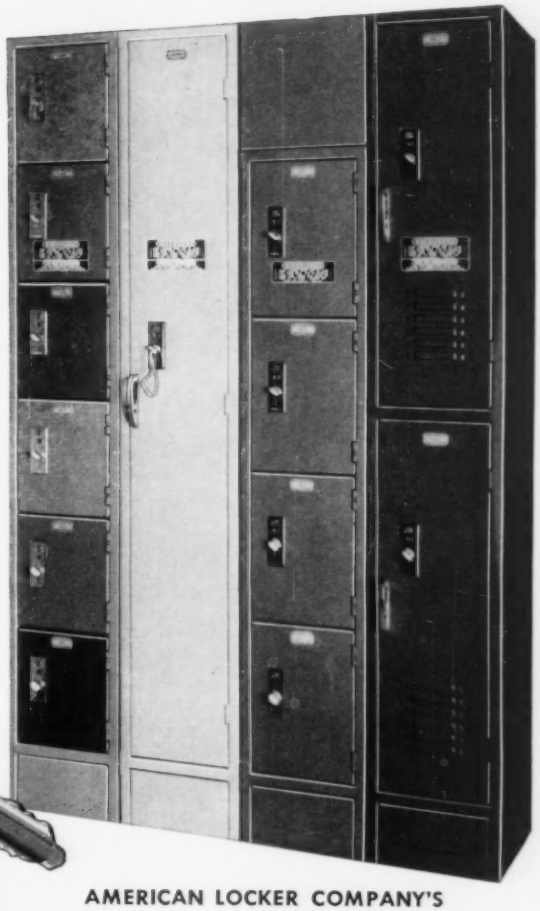

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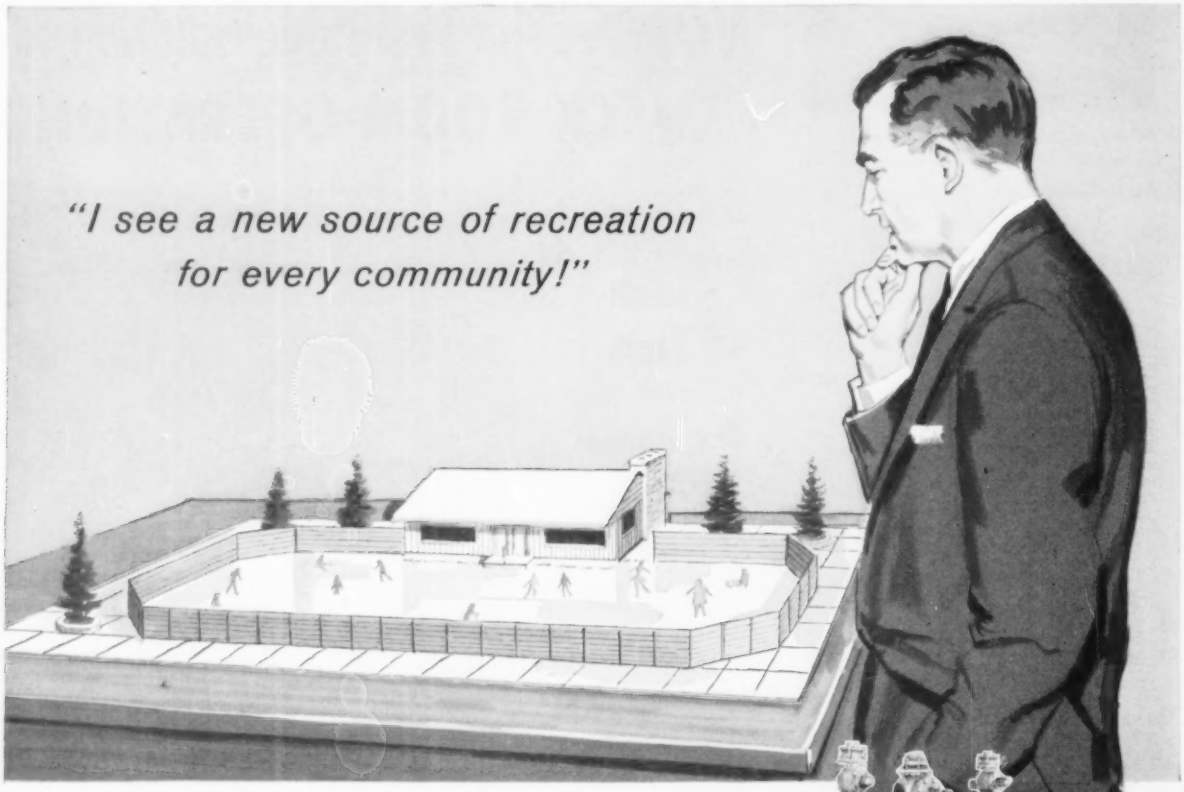

A YORK Ice Skating Rink Offers Winter Fun For The Whole Family

—Pays for itself from its own revenues

POPULAR, FAST-GROWING SPORT—Americans have really taken to the ice! Skating is recognized as a healthful, outdoor winter activity for people of all ages. Today, ice rinks are found all over the U.S., and 90% of all skating is done on *man-made* ice.

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FINANCE WITHOUT TAXES—Municipalities need not raise taxes to build an ice rink. It can be financed from bonds issued by a non-profit corporation, specially formed for that purpose. Bonds are paid off from rink admission fees, skate rentals, concessions.

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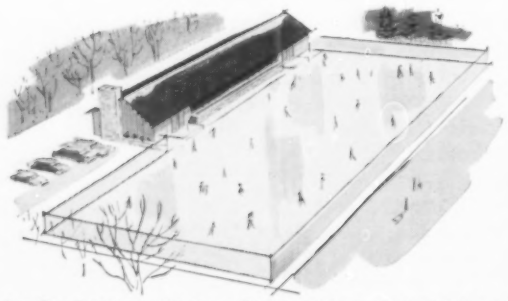

Another York Trail Blazer Concept Proved in Action At *Municipal Ice Rink, Greenville, Pa.*—This town of 10,000 people built a $70,000 outdoor ice rink and warming house that was completely financed without taxes. Dependable York equipment keeps the ice frozen, assuring months of perfect skating. Write York for complete details of the "Greenville story."

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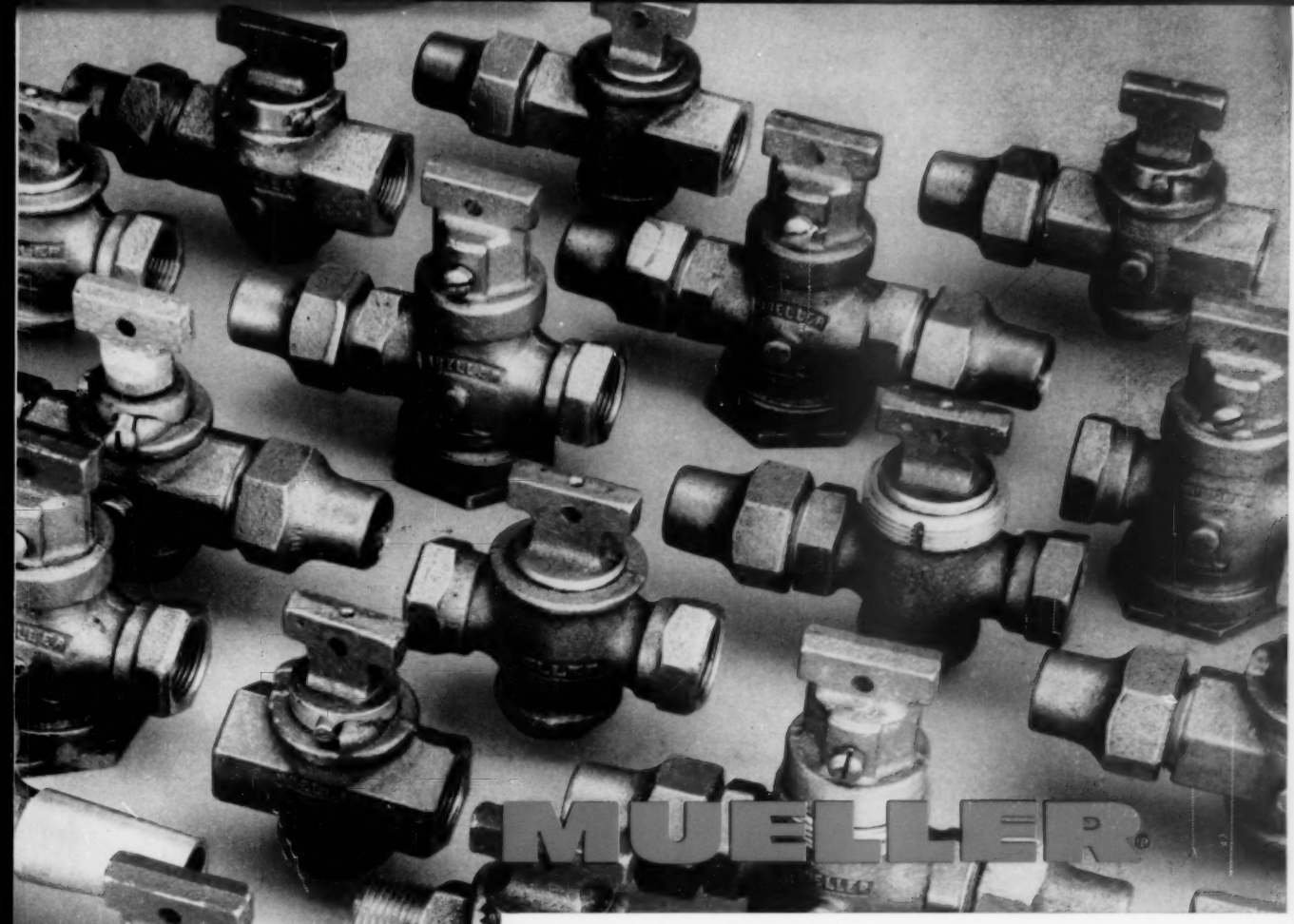

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Inverted Key Curb Stops—Solid Tee Head Curb Stops—"H"Pattern Curb Stops—each of these types and models have been designed to meet a specific need. Each one has been developed and manufactured with the features and advantages of superior design, exacting metallurgical control and unexcelled craftsmanship. Over one hundred years experience in quality water service valves and fittings stands behind every Mueller Curb Stop.

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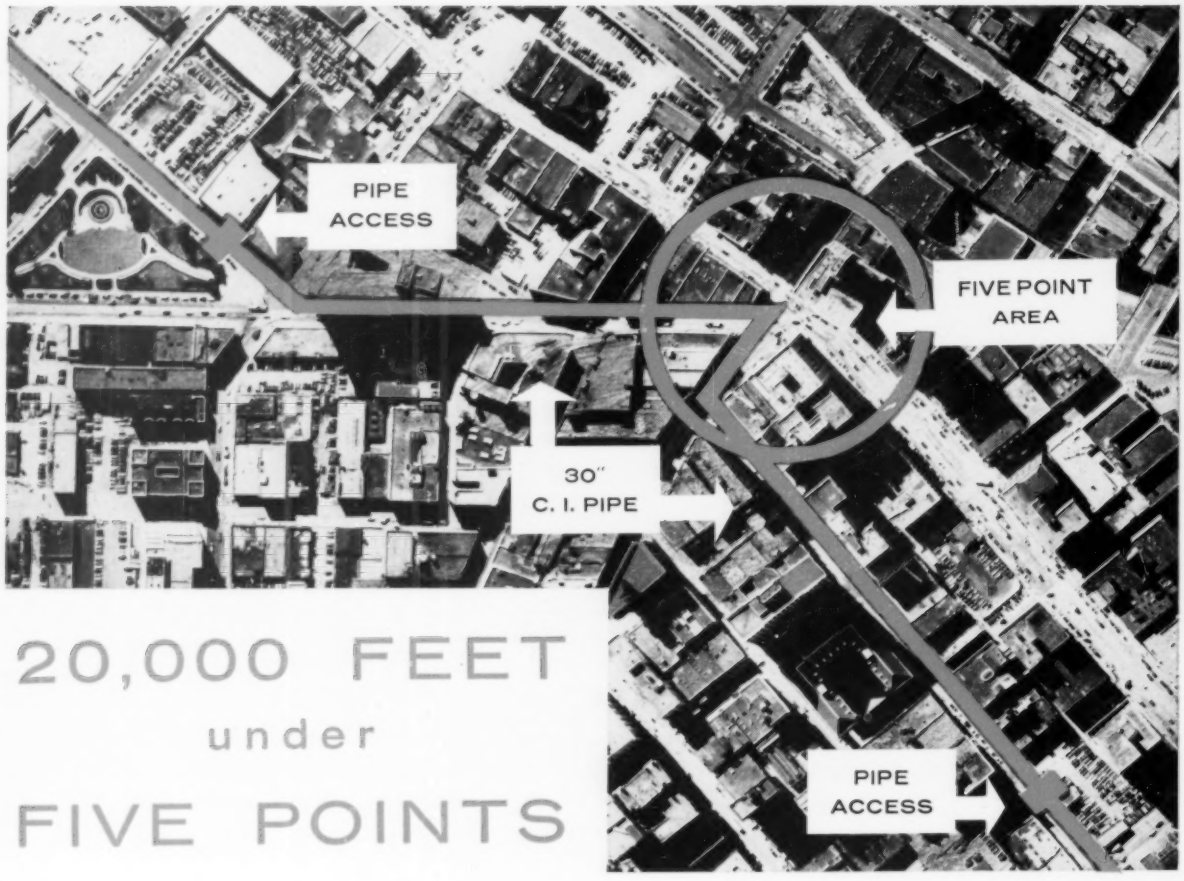
ALL MUELLER CURB STOPS COMPLY WITH ALL APPLICABLE PARTS OF AWWA SPECIFICATION C800-55 AND ASTM SPECIFICATION B-62-52 (85-5-5-5).



20,000 FEET under FIVE POINTS

You're flying over "Five Points," Atlanta's booming downtown area. Through the heart of this busy section Centriline crews have recently reconditioned almost 20,000 feet of water mains *—without slowing business or traffic.* No detours, no disgruntled merchants, and only two small access excavations in over 2,000 feet of dense traffic area, because the job was done with mains in place.

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To date, Centriline has completed six contracts for the city of Atlanta alone; 150,000 feet of pipe have been given a new lease on life. Send today for our illustrated brochure, which shows in detail how the Centriline process can help you save lines from 4 to 144 inches, or contact any of our domestic offices.

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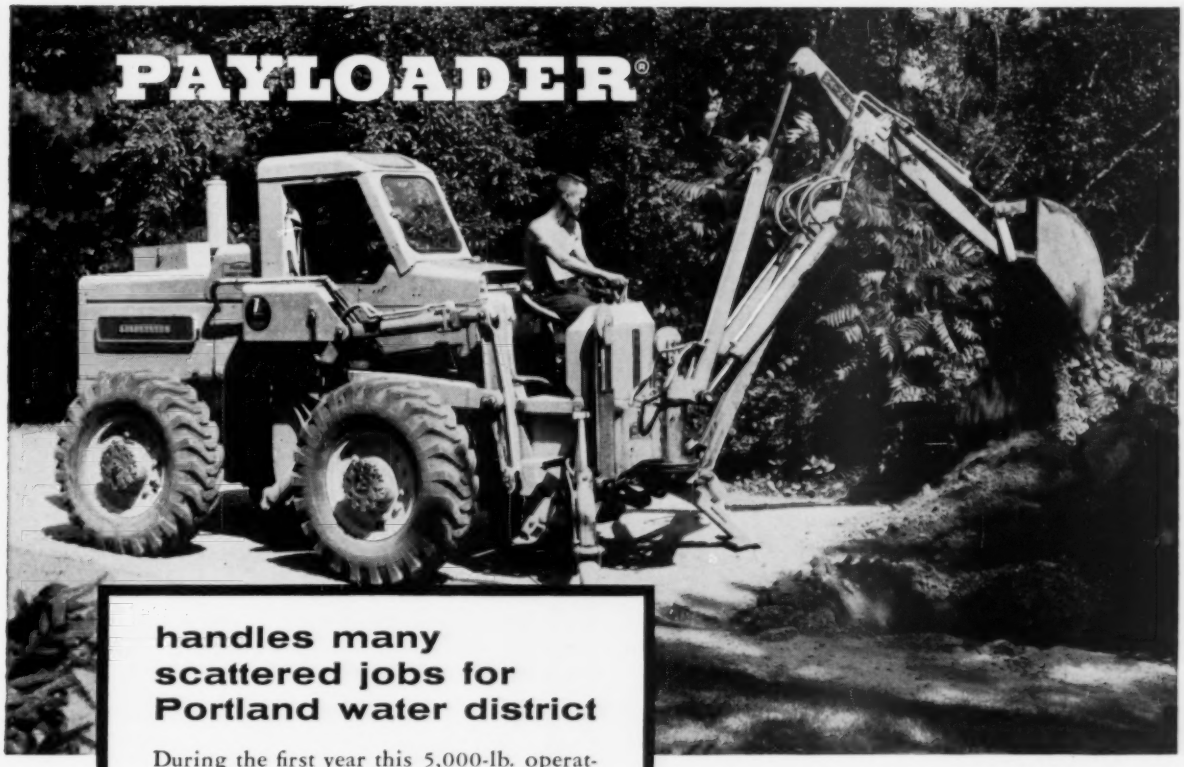

Front-mounted Hough-Wain-Roy back-hoe has maximum reach of 12′-8″ below grade; digs and dumps a full 90° right or left—enables it to operate in congested areas with minimum interference to passing traffic.

handles many scattered jobs for Portland water district

During the first year this 5,000-lb. operating capacity "PAYLOADER" tractor-shovel was owned by the Portland (Maine) Water District it was used exclusively as a loader for clean-up work. At that point, however, the real value of this versatile machine was "discovered" . . . . *easily interchanged attachments make* "PAYLOADER" *the most useable equipment available today!*

A Hough-Wain-Roy hydraulic back-hoe was obtained for their "PAYLOADER" and, as Supt. J. P. Hennings of the Portland District says, "We find the bucket to back-hoe or vice-versa change-over fast and very easy". Mobility of the "PAYLOADER" "is another big advantage in our work . . . we use it chiefly in jobs involving less than 100 lineal feet of excavation and frequent changes of location are required. We also find this unit takes up less space in the street during operation."

Recently, on a 1,000-ft. street widening project, the "PAYLOADER"-back-hoe combination installed 24-ft. trenches, 5-ft. deep and 24-in. wide, to replace old laterals. After the pipe was laid, a back-fill blade was attached to the hoe so the "PAYLOADER" was able to take care of the entire back-filling operation too.

For even more "PAYLOADER" usefulness, check this list of available attachments: Drott 4-in-1 bucket, black-top spreader, street sweeper, leaf loader, side boom, rotary, "V" and blade plows. See your nearby Hough Distributor for complete details.

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Street _____

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4-B-3

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VIBRATING COMPACTORS

ESSICK VR-28-W PATCHING ASPHALT IN GARDEN GROVE, CALIF.

"MAINTENANCE PRODUCTION TRIPLED... ...COSTS DECREASED 80%"

SEWARD H. DART, STREET MAINTENANCE SUPERINTENDENT-SHOWN WATCHING HIS 28" ESSICK VIBRATING COMPACTOR IN ACTION—STATES:

"Irrigation water tracked into the intersections and gutter aprons in Garden Grove, constantly eroded the asphalt and made maintenance a full time problem. As a result, our gutter and intersection patching required frequent reworking, and our costs were high.

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"Now with our patching unit consisting of the 1½ ton dump truck, an Essick 120 gallon Truck Mounted Emulsion Unit, a propane torch, and the Essick VR-28-W Vibrating Compactor, the patch life has been tremendously extended, our maintenance production has tripled, and our costs have decreased 80%.

"The Essick VR-28 really solved the patch problem for us."

SELF PROPELLED — MANEUVERABLE — PORTABLE

Essick High Frequency Vibrating Compactors are constantly exceeding the densities and specifications performed by other compaction methods, while creating new standards of compaction for all types of fills, sub base, base materials, and asphalt.

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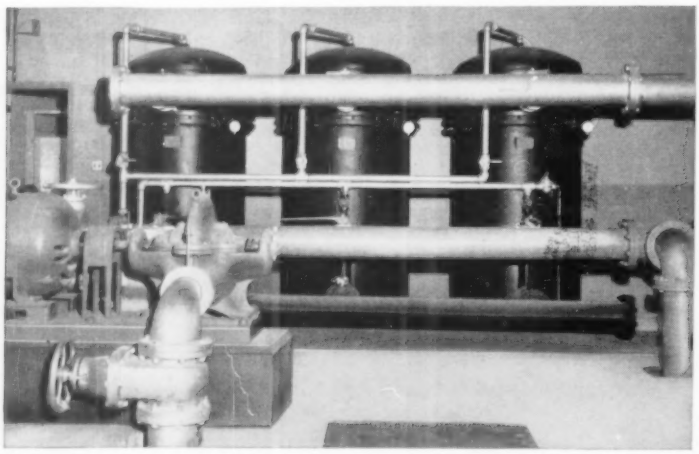

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REX® Verti-Flo® Clarifiers boost capacity, reduce space

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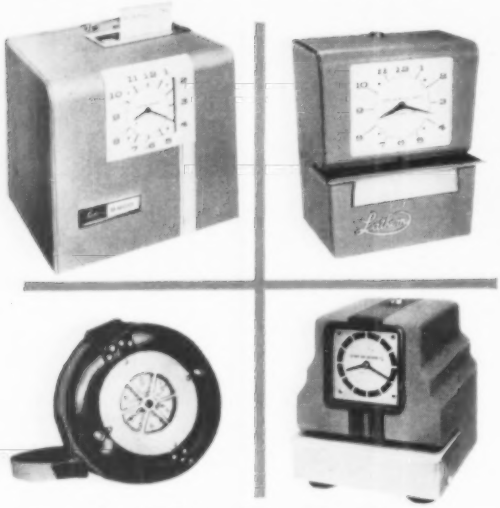

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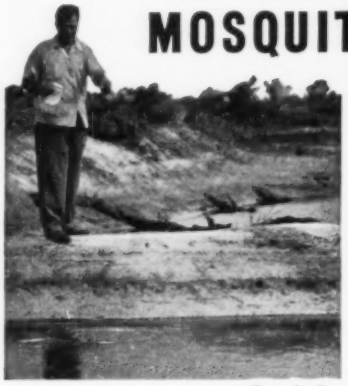

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50 TOSSITS LARVICIDE AN ACRE OF BREEDING GROUND OR 50 POOLS IN MINUTES

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For water, gas and sewage.

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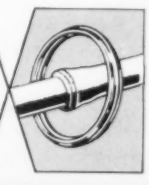

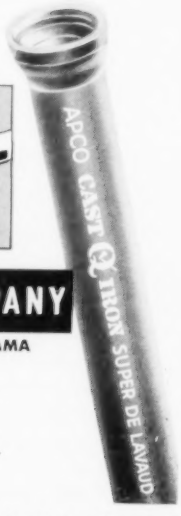

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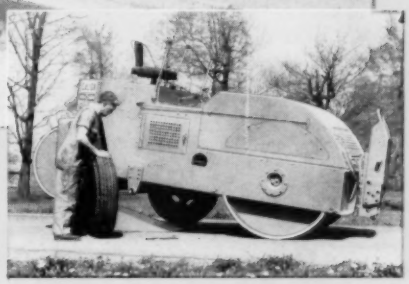

When using the Transport Attachment, the complete roller rests on the towing wheels — which are quickly and easily removed when roller arrives on a compacting job.

GALION 3-5 TON TANDEM

ROLL-O-MATIC Drive provides AUTOMATIC multiplication of torque, AUTOMATIC application of power and AUTOMATIC regulation of rolling speed. There is no master clutch—no engine stalling or overloading.

Shock loads are cushioned—resulting in increased life of engine, gears, shafts, bearings, forward and reverse clutches. Reversing action is smooth.

Compression is variable from 102 lbs. to 155 lbs. per inch of roll width. Large compression roll is 48" diameter and 42" wide. Other features include dual controls, adjustable hydraulic steering, rugged straight line spur gear final drive, disc-type service and parking brake, and 32 hp gasoline engine.

TRANSPORT ATTACHMENT

Save valuable working hours to and from jobs by equipping your GALION 3-5 Ton Tandem with this Transport and Towing Hitch Attachment. It consists of a pair of pneumatic tires on roller bearing wheels with stub axles, a tubular socket for the stationary axles, steel ramp block and towing hitch.

GALION 4-6 TON TANDEM
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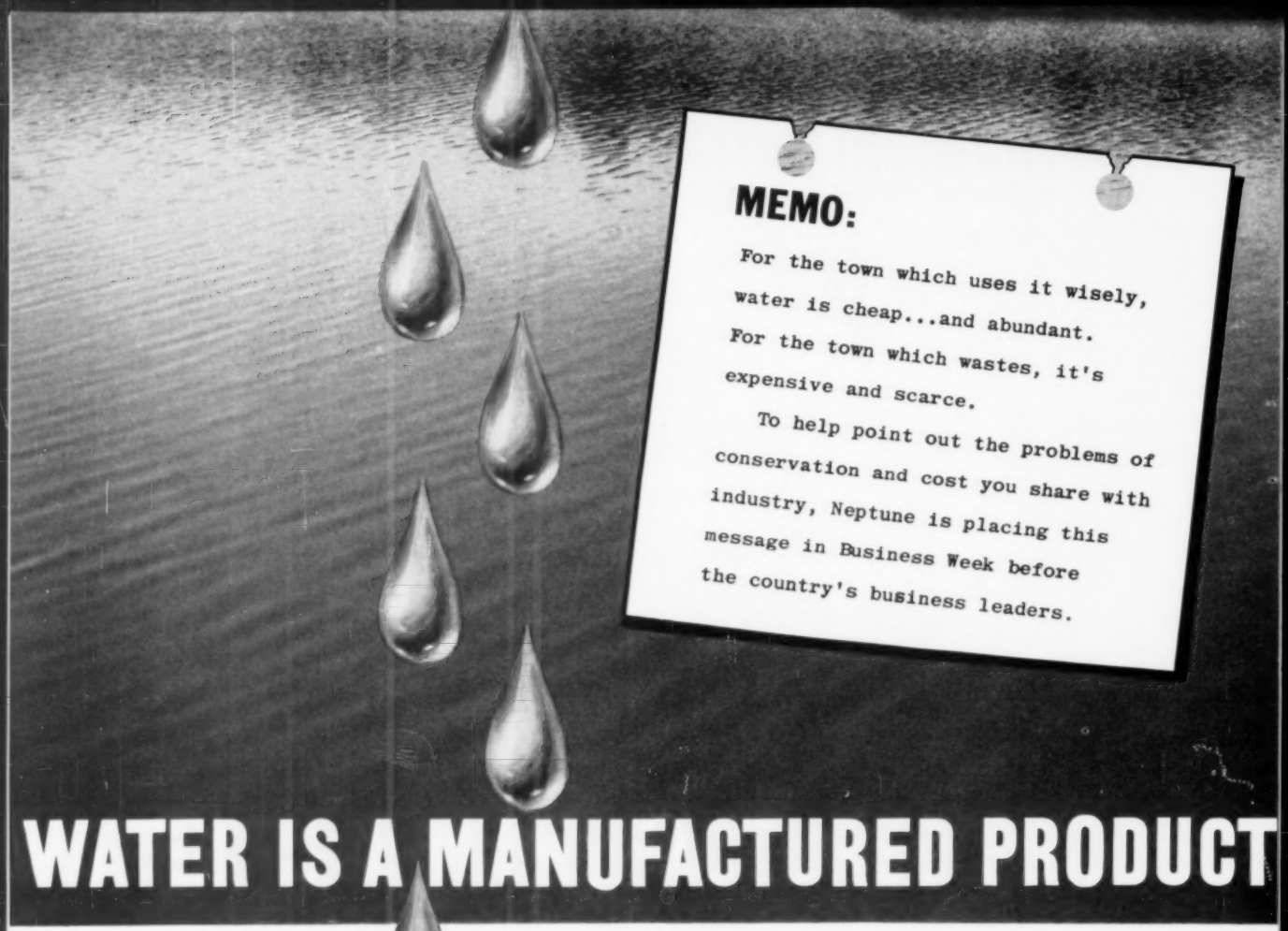
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APRIL 1960

The American City

City Hall Symbolizes San Jose's New Era

. . . and sparks a general municipal improvement program in this once-agricultural region

By A. P. HAMANN, City Manager

The new building reflects democratic graciousness, confidence and strength.

San Jose's sparkling new arc-shaped City Hall stands as a shining symbol of a new era and a new approach to local government in this once-agricultural area of California. It marks the first step taken by the citizens here toward meeting the problems caused by the mushrooming population, expanding industry and booming commerce in the valley once dedicated to the nurturing of the prune. However, the public did not accept this responsibility casually. Passage of a $1,975,000 bond issue for the new City Hall came only after two previous setbacks.

The new structure, dominant building in the civic center grouping, is a four-story reinforced concrete edifice with a two-story wing housing the council chambers and a ground-floor cafeteria. Some 600 of the city's total work force of 1,400 employees use the City Hall facilities.

Each floor of the 4-story structure is designed as a two-way reinforced flat slab, ten inches thick, supported on three rows of columns. The corridor slabs are cantilevered 11 inches out from the inside corridor wall column line. To provide longitudinal rigidity against seismic loads the interior corridor columns were designed with their four-foot width parallel to the corridor while concrete shear walls, spaced equally along the building, provide rigidity in the opposite direction. A structural-steel beam system provides support for the roof over the council area, allowing a wide open area free of columns. A cellular-steel deck with concrete fill and built-up roofing provides the cover over these beams.

A total of 75 tons of structural steel was used in the building and approximately 1,000 tons of reinforced steel was placed in the 10,000 cubic yards of concrete placed in the building. The concrete mix for slabs and standard columns and walls was designed for 3,250 psi compressive strength.

The office areas will be heated

Indoor shrubbery and curving staircase carry out the fresh, uncluttered design of the architect.

and cooled by radiant pipes in the hung ceilings. These ½-inch pipes spaced on 12-inch centers will have water circulating through them at the temperature called for by thermostats for each heating zone.

The building is 60 feet wide, 400 feet long and is curved on a 300-foot radius. It contains heating, ventilation and air-conditioning systems. The architect was Donald Francis Haines, AIA.

Sparked More Growth

The passage of the bonds for the new City Hall signalized other advances in growth and expansion. The administration and the City Council proposed a bold program based on a $23,550,000 bond issue, designed to meet all of the immediate needs of the city for the next six years. Significant features about it were:

- **It would not entail an increase in property taxes.**
- **It would be financed by setting aside half of the city's sales tax revenues and earmarking them to pay for the bonds.**
- **It was based on the assumption, later proved correct, that assessed valuation would increase at the rate of 10% per year to meet the property tax needs of the community.**

A citizens' committee, composed of leaders of the community, spearheaded the drive to win voter approval and on June 11, 1957, all eight items on the ballot passed by smashing 3-to-1 or better majorities. Since then the city has been taking giant strides to keep up with the population which has been increasing at the rate of 40,000 a year, and the corresponding increase in construction, industry and commerce that has resulted. For example:

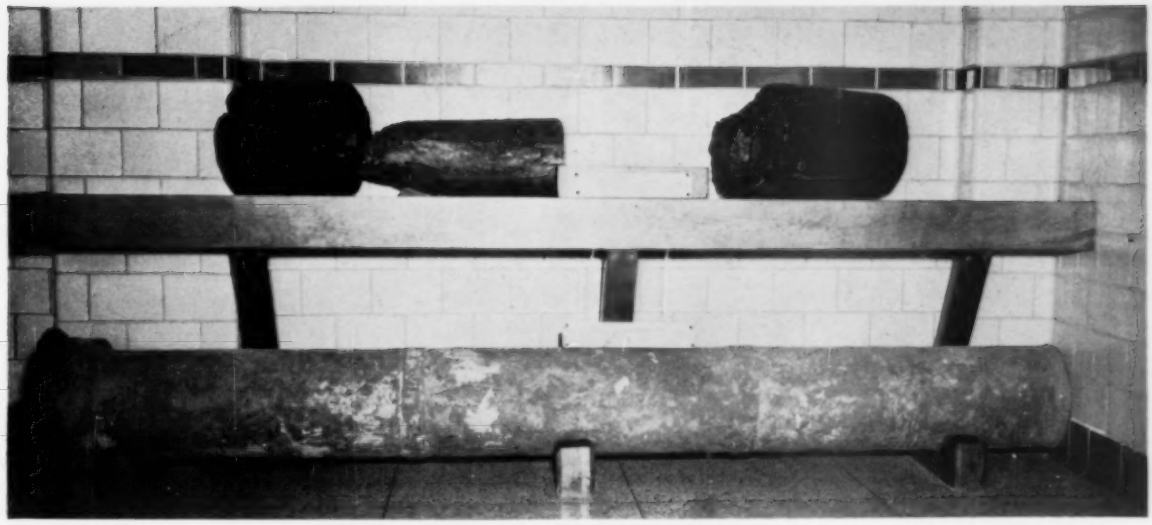
- **Major streets have been widened;**
- **Some ten new parks have been, or are being developed.**
- **Steps have been taken toward making San Jose Municipal Airport the third major airport in the San Francisco Bay Area;**
- **Steps are under way for expanding primary sewage-treatment facilities and construction and secondary sewage-treatment facilities; a second outfall sewer system has been added crosstown;**
- **Several major railroad overpasses have been constructed and others contemplated;**
- **New firehouses and libraries have been built in several parts of the expanding city area;**
- **The first of several outlying administrative sub-stations is coming off the drawing boards.**

The City Council has designated the year 1960 as Charter Year, marking the 110th anniversary of the city's incorporation. Notable is the fact that more progress has been made in the past ten years than in the first hundred years of the city's history.

The old city hall, razed in 1958, was built with the sombre and forbidding features of a castle on the Rhine.

This point is emphasized by the fact that the population in the 1950 census was 94,000 and is today over 200,000, and that the area has increased from 17 to 52 square miles over the same relatively short period of time.

Nerve center of all of this progress is the arc-shaped, modern City Hall structure where modern ideas are being formulated to meet modern needs in an atmosphere conducive to big thinking to meet big problems.



On the bench are samples of the wooden pipe installed when Richmond was a pioneering village. The cast-iron pipe underneath was installed in 1829 and still remains serviceable; there is some in use today.

Wooden Water Mains

. . . in Richmond, Va., give mute evidence of this colonial city's early work in city planning and development

By **H. E. LORDLEY**
Assistant Director

Richmond, Va., differed from most of the early settlements in this country in that it was built according to a prepared plan from the beginning. In many instances a town began with a cluster of houses huddled about a point of natural vantage and extended into the surrounding territory along cow paths or in some other haphazard manner. Not so with Richmond. Colonel William Byrd II owned property at the falls of the James River. Inasmuch as this falls limited navigation of the river, he saw that it had to become a trading point where the raw products of the up-country would be exchanged for manufactured goods which could be brought upstream in boats and that it would be a good site for a town.

However, the early city plan was not as thoughtful as it could have been. Major William Mayo laid out the city in checkerboard style with straight streets crossing each other at right angles regardless of the slope of the ground. These streets remain today as originally planned and have been extended in straight lines. No one has been able to take advantage of the beauful hills to make attractive winding roads. There were numerous springs in the hills and pure water flowed down some of the ravines and supplied the water needs of the community. The water from Bloody Run Spring was carried by means of wooden pipes almost to Shockoe Creek. By similar pipes, laid at private expense, water was carried from springs on Shockoe Hill to houses east of the creek.

The last installation of wooden mains was made around 1808 and the springs, along with wells dug at prominent street corners, supplied the growing town until 1829. The first cast-iron pipe was laid in May 1829 and has continued through the years until today the system has 600 miles of mains.

In the old section of the city, construction crews often find sections of the wooden pipe, as was the case recently in the vicinity of 12th and Cary Streets. A contractor placing a new gas main at that location found a wooden water main in good condition approximately 12 inches below the surface of the paved street; it had been laid parallel to the curb line.

The mains are usually 12 inches in diameter and a 3-inch hole was apparently burnt through the chestnut logs used. The old waterworks men used several methods to connect sections. One utilized an iron band driven into one log which in turn was forced into the end of the second log to give a watertight joint. The main recently discovered had a tapered spigot end which was attached inside the bell of the log.

The local fire company used to chop a hole in the log in event of a fire and obtain water for the bucket brigade. Later, they plugged the hole, and today when we speak of the fire hydrant as a "fire plug" we are paying homage to the wooden plug which was inserted in the water mains of 1800.

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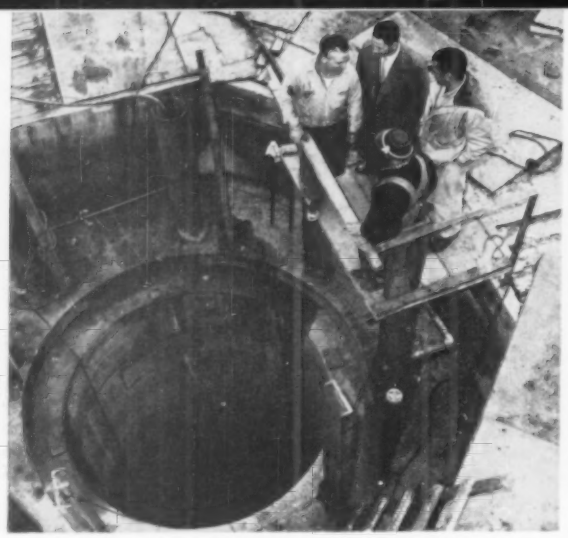
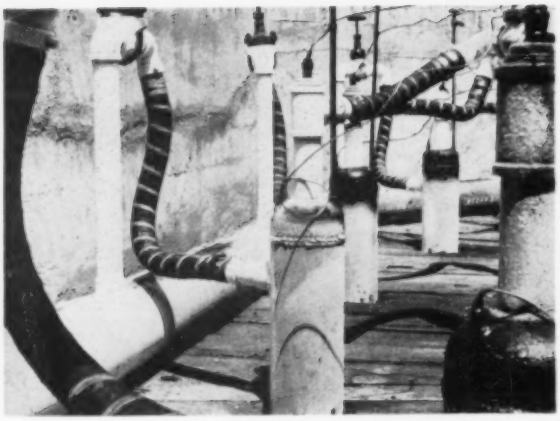
* In addition to being assistant director of the department of public utilities, Mr. Lordley is a former director of the American Water Works Association and is one of its Fuller Award winners.



Concreting was done from the top down in lifts of about 20 feet. Brine supply lines are behind the concrete wall surrounding the shaft.



Thermocouples installed at the inlet and outlet of each freeze pipe provided a good way to determine the temperature differential of the brine.

Ice Wall Protects Shaft Excavation

New York City employs a freezing method to sink a deep sewer shaft safely adjacent to large buildings

A wall of frozen soil, 123 feet deep to bed rock, protects the buildings adjacent to a deep shaft being sunk on Manhattan Island along the East River. The shaft is part of the Newtown Creek Pollution Control Project being constructed by the City of New York, Department of Public Works, Division of Sewage Disposal.

Prevailing sub-surface conditions made it necessary to carry out the work with utmost precaution to guard against movement of the formations from under the buildings when the shaft was being sunk. After studying several methods, freezing was selected as the most practical and reliable way in which the work could be carried out with safety.

The freezing system comprises 21 freeze holes, each 8⅞ inches in diameter drilled on a circle 26½ feet in diameter around the shaft location. Each freeze hole is 123 feet deep and contains a freeze pipe consisting of a six-inch outside pipe closed at the end and a 2-inch inside pipe open at the end connected to the supply and return manifold of the refrigeration plant. Eight-inch-diameter brine supply lines conduct the brine from the refrigeration plant to the freeze pipes. Thermocouples were installed at the inlet and outlet of each freeze pipe with suitable instrumentation for measuring the temperatures. A hole drilled in the center of the shaft with a pipe injected in it provided information on the progress of the freezing and also served as a pressure-relief hole.

The freeze cycle starts by pumping the brine through the supply manifold, down the smaller pipes, up the larger pipes and through the return manifold back to the cooler of the refrigeration plant. Under constant refrigeration, the outer pipes become surrounded by an ice cylinder of increasing diameter until they join to form a solid frozen wall within which the shaft can be excavated in free air.

Freezing started on August 4, 1959 and in 70 days all was in readiness for the excavation work. However, the engineers decided to wait another ten days before excavating to thicken the ice wall for added safety.

At the start of freezing the refrigeration load amounted to 135 tons. In 38 days the shaft was frozen solid to the center at the bottom and the refrigeration load had decreased to 36 tons. After 80 days the load remained fairly constant at 26 tons. The temperature of the brine was lowered from 59°F (which was ground temperature at the start) to 18°F in 80 days after which it remained fairly constant. The temperature differential between the brine entering and the brine leaving the freeze pipes varied from about 3°F at the start to ¾° after 70 days of freezing.

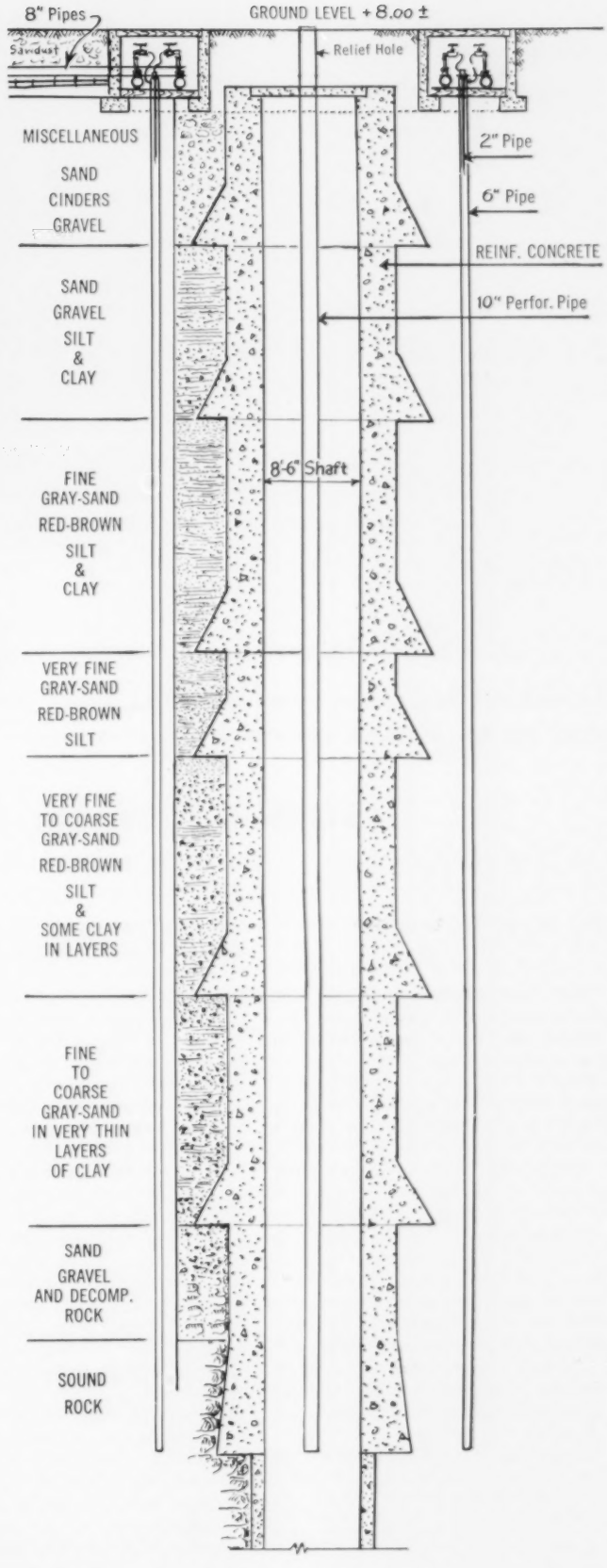
Shaft Construction

Shaft construction consisted simply of excavating the frozen material, using air tools, and hauling it out by crane bucket. Concreting of the shaft, which has an 8½-foot finished inside diameter, was done from the top down in approximately 20-foot lifts. Concrete was poured directly against the frozen soil. Thermocouples placed against the wall showed that concrete temperatures did not reach the freezing point. However the wall was made several inches thicker than specified in order to serve as an added safety measure.

The excavation was belled out at the bottom of each lift to provide bearers or footings and each joint was provided with a key and water stop.

Construction followed this procedure to bed rock (about 123 feet below ground surface). The balance of the work is being carried out under normal rock-drilling pro-

Shaft excavation in the frozen soil reached the 100-foot level in 55 days.



A section view of the shaft showing the location of freeze holes and construction procedure to bed rock.

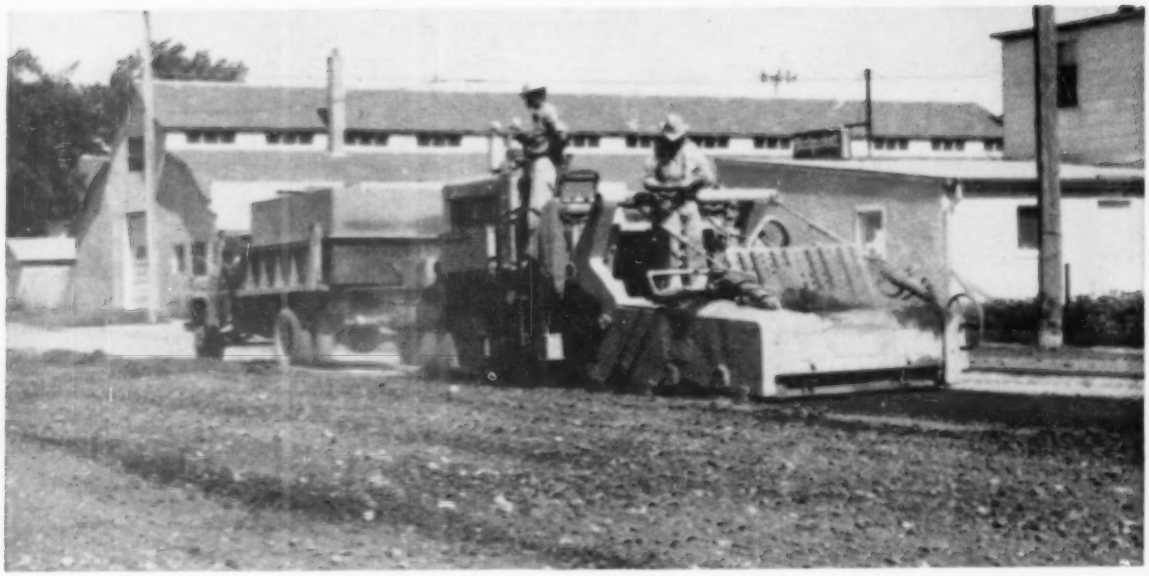
cedure to reach a depth of about 300 feet.

A tunnel being excavated under the East River will connect this shaft to a second shaft already excavated on the Brooklyn side of the river.

The refrigeration plant, designed, supplied and installed by the York Corporation, Division of Borg-Warner, consists of two ammonia-brine cooling systems each having a capacity of 55 tons of refrigeration when supplying 385 gpm of calcium chloride brine at 17°F. This arrangement, with cross-connected brine pumps, made possible the operation of either system or pump as a unit, assuring continuous refrigeration should one unit or pump fail.

Placing each complete unit on its own structural-steel base to comprise a complete package increases the resale value, for each unit has sufficient capacity for a standard 185 foot by 85 foot ice skating rink.

Poirier & McLane Corporation of New York is the general contractor. Charles P. Gail, Construction Engineer with Winston Bros. Company of Minneapolis, Minn., served as the freezing design consultant. Freeze holes were drilled by the Pennsylvania Drilling Company of Pittsburgh.



A water truck hooked to the single-pass mixer provided the required moisture during the mixing process.

Low first cost, low maintenance cost, and simple construction add up to a triple-pronged reason why . . .

Soil-Cement Streets Are Good

By A. J. KOVASH*

Our first year's experience with soil-cement street construction convinced us that it is profitable to the contractor and also a boon to many communities. For these reasons, and because of its performance record in our North Dakota climate, we feel its wider use is inevitable.

While this type of construction is new to us, its use is not new to the area. Fargo first used it on airport-runway construction in 1941. Since then a number of cities have built soil-cement streets and the state has constructed more than 30 miles of highways with it. More cities could use it to advantage.

Climatic conditions in North Dakota require a paving material able to withstand temperature differentials as great as 150°F, an average frost penetration of 55 inches and frequent freeze-thaw cycles during critical periods of the year. Because of the excellent condition of soil-cement pavements which have been in service under these extreme conditions for a number of years, many engineers and contractors are convinced that soil cement is an excellent material for the North Dakota climate.

Another consideration is the fact that our state lacks an abundant supply of good granular materials. Soil-cement construction permits use of materials that would be substandard in other types of road-building, thus permitting conservation of our limifed supply of aggregate used in portland-cement concrete.

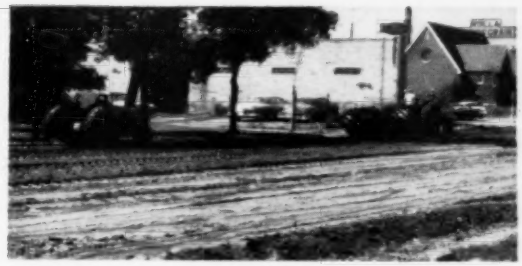
One advantage of soil cement is the economical use of most existing materials. For years many North Dakota cities and towns engaged in the time-consuming and expensive process of gravelling their streets. This was necessary to keep them passable, but it did not eliminate the mud and dust. With soil-cement construction, part of this expenditure can be salvaged, for in many areas of the state soil conditions are such that the addition of gravel made feasible the use of an economical cement content to stabilize the material in place.

Simple equipment requirements add up to another important advantage of soil-cement construction. In most cases, a contractor can use equipment he already owns, needing to add only one or two major items. In our case, the only major addition consisted of a P & H model EA-58 single-pass soil stabilizer, six feet wide. In addition, the mobility of most of the equipment needed keeps the cost of moving from project to project low.

Construction procedures count as a third big advantage. In 1959 we were low bidders on two street-improvement projects in the cities of Rolla and Bottineau. The contracts totaled approximately 300,000 square yards. Both of these proj-

* Mr. Kovash is president of Kovash, Inc., contractors of Dickinson, N. D. He based this article on a paper he presented at the 58th annual convention of the American Road Builders Association.

A truck-towed cement spreader permitted the use of bulk cement to help keep cost low.



A spring harrow and sheepsfoot roller, both drawn by tractor, produced good compaction results.

This 1,500-gallon Rosco distributor was used to apply the bituminous material for the double-surface treatment.

for Both City and Contractor

ects were mixed-in-place with soils requiring comparatively low cement contents. The design, a six-inch soil-cement base topped with a double bituminous surface, allowed for simple construction procedures. In view of the advantages mentioned, we were able to give these communities finished streets at an average construction cost of $1.12 per square yard.

Equipment used consisted of the stabilizer, an auger for unloading cement, a Hercules bulk cement spreader, one sheepsfoot roller and tractor, one pneumatic and one self-propelled steel roller, a spring-tooth drag and tractor, two motor graders, three water trucks, a bituminous spreader and one truck-type chip spreader plus necessary dump trucks. The latter were used to bring in cement, borrow material as needed, and apply chips.

Although the streets varied in width on both projects, we decided to do each city block as a section.

First we shaped the street to proper crown and grade and removed and replaced with suitable borrow material any isolated pockets of undesirable material. The proper amount of cement was then deposited on the street through the use of dump trucks and the cement spreader. Cement quantities were checked by weighing each load and checking the spread distance of that load. The engineer in charge also kept constant checks of cement quantities shipped against the amount of completed base.

Mixing was accomplished with the single-pass mixer which added water through a metered pump. The inspectors checked to make sure the mixed soil-cement would be at optimum moisture content for compaction and the machine was set to mix the depth required for a six-inch base when compacted.

The sheepsfoot roller provided initial compaction and the spring harrow was used with good results to remove compaction planes. This was followed by minor shaping to grade and crown with the motor graders and finishing with the pneumatic and steel-wheeled rollers. Light spraying by the water trucks kept the surface from drying during compacting and testing.

After final compaction was completed, the double-surface treatment was applied.

In spite of the fact that this was our first season in the soil-cement construction business, we were still able to reach a peak daily production of 8,500 square yards of processing using the six-foot wide mixing machine. The first project, at Rolla, amounted to 115,000 square yards and was completed in approximately thirty working days.

The Rolla and Bottineau projects, like most paving projects in smaller North Dakota municipalities, were financed through special assessments. People throughout our state who have soil-cement streets are well satisfied with their durability and low cost of maintenance. We are confident that these streets will be giving good service long after the bonds are retired and special assessments paid.

Only One Answer: Incineration

Study finds dump sites running out in Wisconsin's Milwaukee County—advances incineration as the only long-range solution for county-wide refuse disposal

By C. D. GOFF*

Incinerators, whether they are large, centrally located cooperative plants serving whole districts or small units operated by individual communities, provide the only logical solution to Milwaukee County's refuse-disposal problems. This is the conclusion of the Refuse and Garbage Disposal Committee of the Metropolitan Study Commission, following more than two years spent studying refuse-disposal practices in the county.

Of five methods currently used in metropolitan Milwaukee, two, open dump and hog feeding, have declined sharply. The major methods are sanitary landfill and incineration. A growing practice—in several communities required by ordinance—is disposal by domestic garbage grinders.

Incineration on Increase

Of the two principal methods, only incineration is on the increase. Cities and villages operating landfills face rising costs of longer and longer hauls to new landfill sites. Only one, Glendale, estimates that its facility will provide long-term service—30 years. Officials of the rest profess little hope that new landfill sites can be obtained within reasonable hauling distance when, in too few years, present sites are full. Most of the Milwaukee-area municipalities that use the landfill method are in the 2,500 to 10,000 population range.

The larger cities already destroy combustible refuse by incineration but they must use sanitary landfills for disposal of incinerator ashes, glass bottles, tin cans, and other non-combustible materials. Even with the very best incinerators available, dumping grounds are still needed for ashes, and such dumping grounds are in increasingly short supply.

There are now ten incinerators operating in Milwaukee County and one under construction. Milwaukee built Wisconsin's first incinerator in 1903. This, and another placed into operation in 1910, have long since been retired. The city now operates three plants—one 200-ton-per-day and two 300-ton incinerators—built between 1930 and 1955.

The first suburban Milwaukee incinerator was a ten-ton unit built by West Allis in 1916. Since then West Allis has worn out its first and second plants and completed a new 200-ton incinerator in 1956. Wauwatosa will complete its second plant, a 165-ton unit, in 1960.

Similarly, Whitefish Bay and Shorewood completed their second units in 1957 and 1958 respectively. South Milwaukee's incinerator is a 35-ton unit built in 1941. West Milwaukee contracts with West Allis to incinerate its refuse.

Commercial and industrial waste disposal, though not treated in the study, represents at least 50% (estimated) of all combustible and non-combustible refuse generated in Milwaukee County. Some is burned in company incinerators, some is hauled to dumps by company-employed personnel and trucks, and enough remains for private truckers to contract an "industry-wide" gross revenue of between $2,500,000 and $3,000,000.

Hotels, hospitals and restaurants put much of their garbage in commercial-size grinders. Commercial and industrial establishments generally have no specific complaints about services or charges of private contract haulers and show little interest, at present, in changing their arrangements.

Salvage

Waste products of manufacturing and commercial operations yield enough revenue to keep nearly 200 locally licensed junk and scrap-metal dealers in business in the county. Nevertheless no municipal incinerator conducts salvage operations. Some have experimentally converted incinerator heat into hot water and steam for sterilizing garbage trucks, heating buildings and even generating limited power. Although these tests have showed promise, with the exception of junk and scrap metal dealers and the six hog-feeders that use cooked commercial garbage, salvage of waste products is of slight consideration.

Milwaukee County was the first county in Wisconsin (1953) authorized to own and operate a dump. It began operations in 1956, and in 1958 alone, received 10,567 truckloads of refuse at this site. Some 35% to 40% of the users were private commercial haulers, a small percentage were municipalities and the remainder were agencies of the county government and private citizens. In 1957, the Wisconsin Legislature authorized the Milwaukee County Board of Supervisors to "construct, equip and operate incinerators," but the Board as yet

* Dr. Goff, a graduate of the University of Wisconsin, received his M.A. and Ph.D. degrees from Northwestern University. He is an Assistant Professor of Political Science at the University of Wisconsin - Milwaukee and was the research director for the Milwaukee Metropolitan Study Commission.

has not implemented the authorization.

Refuse collection and disposal in the Milwaukee area have evoked little public criticism. The common denominator is the repeated statement that municipalities are rapidly running out of dumpsites. Almost no one will do more than worry.

There is no refuse disposal planning on a county-wide, metropolitan or regional basis. The city of Milwaukee responded to this policy problem by retaining Black & Veatch, engineering consultants of Kansas City, Mo., for a $75,000 federally-aided study of refuse disposal. No comparative study is being made or planned for the remainder of the county.

Most of Milwaukee's individual incinerator-using suburbs have responded by building new incinerators during the past few years, each with capacity enough for that community's anticipated needs for the next 25 to 40 years.

No group has made a cooperative effort to build and operate a single incinerator to serve a potential north-shore or south-shore district.

These small plants may provide an essential service for individual communities, but the long-term cost will undoubtedly exceed that of a large facility that could spread its unit cost over a wider area.

Disposal of household refuse and garbage has traditionally been regarded as a municipal responsibility in Milwaukee County but, as available dump and fill sites are lost and as hauls get progressively longer, disposal becomes more and more a metropolitan problem. The health and welfare of all persons residing in urbanized areas of greater Milwaukee may force refuse disposal into an inter-municipal and inter-county relationship.

What of the Future?

It already has been established that open dumps and hog-feeding are rapidly disappearing. They currently represent only a small part of the total volume, and expansion of urban areas will undoubtedly eliminate these practices.

Garbage grinders, both commercial and domestic, are becoming increasingly popular. They have been instrumental in reducing the percentage of wet garbage in total refuse from 65% in 1952 to the present-day 10%. They are required by ordinance in many cities.

The three largest cities no longer use sanitary landfills. Even the smaller municipalities probably will not continue for more than ten years because of zoning prohibitions and the exhaustion of available landfill sites.

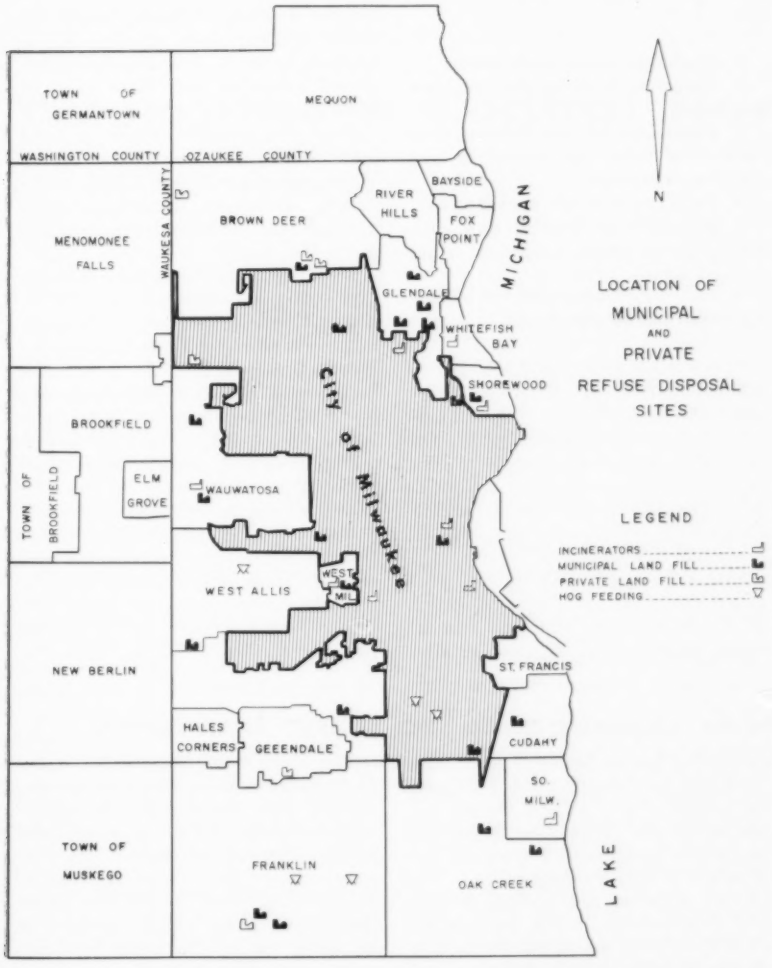
In addition, the sanitary landfill is now the method most exclusively used by private refuse haulers. Private dumpsites far outnumber public sites. Sites within "reasonable" hauling distance (6-10 miles) of most municipalities have all but disappeared, and a serious site shortage is foreseen within less than ten years.

When existing sites have been filled, alternatives will be:

1. Fillsite enclosures of tongue-and-groove sheet steel piling in shallow areas of Lake Michigan. This would add to county park land and to the Milwaukee Harbor Wharf with proper topping and landscaping.

2. Long-distance transfer hauling (25 miles or more) in large trucks or railroad gondolas.

3. Incineration of all domestic, commercial and industrial refuse. Even with incineration, however 5% to 15% of the original combustible bulk will require fill disposal. This would reduce substantially the one acre of land per year that is required for straight landfill disposal of refuse from each 10,000 persons.



Consideration probably will be given to purchase of refuse crushers that condense non-combustible waste volumes. These units are essentially hammer-mills that crush glass bottles, tin cans, cinders and even concrete to ½ or ¼ of their original volume. The machines cost from $50,000 to $100.000 and can crush up to 200 cubic yards of material per hour. Purchase of a crusher could therefore prolong the life of a dumpsite by three or four times.

The one answer to the Milwaukee County problem seems to be incineration. Reduction in bulk is the only one advantage. The spread between the present high cost of construction and operation of incinerators and the cost of landfill

The Green Bay Avenue Incinerator in Milwaukee shows that with proper design and landscaping, refuse disposal and quality dwellings can co-exist.

operation will narrow as hauling distances increase.

Disposal cost per ton of refuse tends to decrease as the size of the plant and the hours of incinerator operation increase. Few extra men are required to operate a large incinerator compared with a small-plant crew. Specialist-technicians (firebrick mason for example) are justified on a fulltime-employment basis in one or more large installations—it would be impractical to employ such specialists for a small incinerator operation.

Good design, competent operation and expert maintenance are the ingredients for a successful incinerator program, and it is unusual for the small community with a small unit to have all three.

"Wood-hoggers," almost exclusively accessory to the larger plants, prepare tree trunks, branches, timbers and other combustible refuse for burning. Large incinerators also provide better control of temperatures.

Large multi-furnace plants can close down a furnace and continue to operate other units while that one is being serviced or repaired.

Burning should be a 24-hour-per-day, 6-day-per-week operation. Advantages of this schedule are:

1. Maximum use of costly plants

2. Reduction in plant size and capital costs

3. Elimination of lost burning time because of firing up, quenching and cleaning operations

4. Decrease in smoke and fly ash

5. Reduction in heating and cooling cycles to which refractory bricks are subjected

6. Increase in practicality of operating heat-salvage equipment.

These considerations have led to the prediction that future incinerators will be built and operated under inter-suburban cooperation. For example, seven north shore municipalities (Shorewood, Whitefish Bay, Fox Point, Bayside, Glendale, River Hills and Brown Deer) could reasonably build and share one plant; the four south shore communities (St. Francis, Cudahy, South Milwaukee, and Oak Creek) could build and share another one.

Evidence indicates that a single 200-ton incinerator, capable of serving some 200,000 people in a six- to ten-mile radius, and burning on a 24-hour basis, would be more efficient than smaller incinerators in each community which would burn for only four to eight hours daily.

It is also possible, under present state legislation, for the county to build and operate a large incinerator, accepting municipal, commercial and industrial combustibles on a fee basis.

Developments in incinerator design promise greater cost reductions. Continuous-feed, high-capacity, round-the-clock units may cost as much as 50% more to build, but direct operating costs are only about $2.40 per ton, compared with $4.20 (average) in batch-fed, manually-stoked incinerators. Current incinerator costs in the city of Milwaukee average $6.08 per ton.

Mechanized furnaces burn more thoroughly, emit less fly ash and smoke. They also have a superior quality of ash residue. Heat recovery may result in additional savings in larger units.

New Booking System Applicable to City Libraries

Fred A. Rella, Film Production Director, New York State Department of Commerce Film Library, Albany, N. Y., said, "The greatest loss of time occurred in checking the files to determine the status of requested films. The solution came when we adopted a mechanized Remington Rand Robot Kardex unit for this work. Now, one girl is able to do the entire booking operation.

"When our librarian gets a request for a film, she pushes a button referring to the proper section of the alphabet. A slide of records is delivered to her automatically. The visible edge of the pocket enables her to select the proper card immediately. By checking it, she is able to see whether the film is available."

The New York State Department of Commerce has a film library containing 1,900 16mm color and black-and-white sound films on many subjects. They are distributed to interested groups throughout the United States. Last year, 12,089 film bookings were made. That means that as many as 150 requests for films were made in a day.

When a water customer comes into Saginaw's Department of Finance to question his water bill, a clerk writes the customer's book number, address, and a request for the last three, or five, previous readings on a TELautograph telescriber. What she writes with the device's pen-like stylus is instantly reproduced in ink both on her telescriber . . .

. . . and on a similar unit in the Water and Sewer Department billing office nearly a mile away. A clerk there gets the proper meter book and writes the readings requested which are reproduced on the telescriber in the Department of Finance.

Telescribers Control Records A Mile Away

By **CARL J. FAIST***

Saginaw was one of the first cities in the nation to set up a centralized Department of Finance. Since 1936, all financial operations of the Assessor, Treasurer, Controller, and Water and Sewer Administration have been in one office, under one control, integrated so that personnel, records and equipment are, to a large extent, interchangeable.

Now longhand message equipment enables us to maintain this control, although expansion beyond the physical limits of our office has forced us to move water and sewer billing and records to our water and sewer shop building which is nearly a mile away.

For example, when a water customer arrives at the Department of Finance counter in our City Hall to question the amount of his water bill, our clerk can have any information she wants for him, in writing, in less than a minute.

Based on past experience, we knew that telephone contact between our department and the water and sewer shop building would not be adequate. Verbal transmission of meter readings, dates and addresses would have been hopeless because "B", "C", "D", "3", etc., sound too much alike over the phone.

In addition, a much-used phone link tends to encourage superfluous conversation among the employees and would have tied up the switchboard.

However, this writer had had experience (in another community several years ago) with equipment made by the TELautograph Corp., Los Angeles, Calif. Consequently we installed a simple two-station link at the time of the move and avoided all the potential problems.

One TELautograph transceiver is on the front counter in the Finance Department. The other is in the billing office at the water and sewer shop building. To operate these units, called telescribers, the clerk at either end simply writes with a pen-like stylus. The information is reproduced instantaneously in ink, on paper in both machines.

We furnish the water, read the meters and prepare the bills not only for Saginaw, but also for several suburban areas around the city. All told, we service a metropolitan population of 140,000. Queries on bills come in hot and heavy on the day that the customers receive them in the mail.

In addition to queries on bills, a wide variety of miscellaneous information about them is transmitted over our TELautograph equipment. Included are corrections on the name in which a new connection is to be billed and previous information from a meter book when needed.

A simple longhand message link has played a vital part in maintaining the contact and control necessary for our integrated Department of Finance. Our 23 years of experience have convinced us that centralized operation gives the resident of the community the greatest value received for his tax dollar.

* Until June 30, 1959, when he retired, Mr. Faist was Director of Finance, City of Saginaw, Mich. Philip E. Goodlander is now Director of Finance.

▲ *Off-Street Parking.*

Ironing Out The Traffic Kinks of Auburn & Lewiston, Me.

The twin cities of Lewiston and Auburn, located on opposite banks of the Androscoggin River in central Maine, contain the principal industrial complex and the second largest urban community in the state.

The development of shoe manufacturing as a major industry, along with the expanding regional service functions of the cities, has tended to reduce the severity of the economic and population declines that have plagued textile manufacturing communities throughout New England during the past quarter-century.

The 1950 Lewiston population was

▼ *On-Street Parking.*

40,974, and the Auburn total, 23,134. The combined area of the two cities is 101 square miles, 66 square miles in Auburn and 35 square miles in Lewiston. The Lewiston-Auburn urban area is the focal point of the highway network of Androscoggin County. Six major arterial routes extend radially from the two river crossings linking the two cities.

Survey

Out of a survey by Edwards and Kelcey, Engineers and Consultants, of the present and future needs of Lewiston and Auburn with respect to arterial routes, city streets and parking facilities, an overall plan of improvement has been developed to meet the anticipated local needs for the next 20 years.

The Lewiston and Auburn traffic and parking survey was undertaken under the direction of the Maine State Highway Commission. Half of the cost was met by the U. S. Bureau of Public Roads and the other half shared by the Highway Commission and the two towns.

City streets and arterial highways were examined for (1) roadway capacity and traffic demand, (2) quality of traffic flow with respect to safety and convenience, and (3) adequacy of the street network. Conclusions follow.

1. Street capacity is inadequate at several locations because of

(a) Narrow roadways, poor alignment, and faulty pavement surfaces

(b) Insufficient or inadequate traffic regulations and regulatory devices

(c) Interferences from curb parking operations and pedestrians

(d) Loss of street width because of parking

(e) Vehicular conflicts at intersections

(f) Inefficient traffic signal installation and operation

2. The key to long-term traffic relief is to reduce demand on North Bridge, the major east-west arterial link between Lewiston and Auburn.

The origin and destination survey shows that 45% of all trips entering and leaving the urban area have origin or destination in downtown Lewiston. About 60% of all North Bridge Traffic has an origin or destination in downtown Lewiston. Only 25% of all North Bridge traffic has an origin or destination beyond the Sabattus Street intersection in Lewiston. Half of this 25% had an Auburn origin or destination south of Court Street, however. Less than 5% of all North Bridge traffic is through traffic—with neither origin nor destination within the urban area. These findings demonstrate the need for alternate direct access to the Lewiston central business district. They also show that any by-pass of the east-west arterial link would not provide lasting or substantial relief.

In Lewiston unsatisfactory parking conditions prevail throughout most of the central business district and to some extent in the lower Lisbon Street shopping area. Inconvenience and economic loss, the chief ill effects of inadequate parking, are apparent. In addition, lack of parking can nullify a basic purpose of city streets, that of providing access to abutting property. Furthermore, street capacity is taxed by vehicles in search of, and in competition for, parking spaces.

There are not enough spaces within reasonable walking distances to shops and other destinations to accommodate typical daily peak period parking demands. Other conditions that contribute to the inadequacy of parking facilities in Lewiston include, "meter feeding," unrealistic meter charges and time limits, unattractive off-street lots, and too great a difference in charges between on-street and off-street parking.

In Auburn parking space generally meets the demand.

The existing supply of parking spaces—both on-street and off-street—within the Lewiston study area is shown in the street map. In the core area, usage of existing parking spaces nearly saturates the theoretical space hours of supply. During the morning and afternoon peak periods, the supply of spaces is insufficient. In summary:

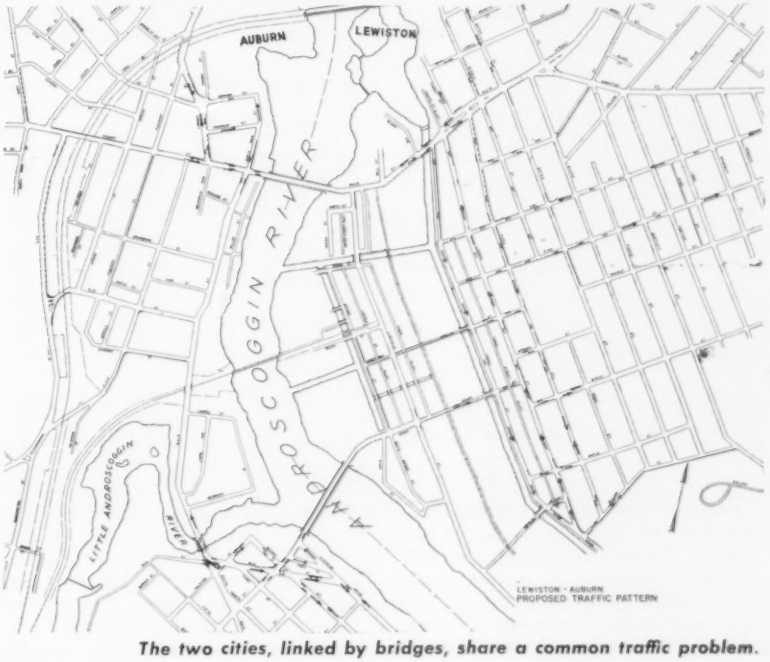
Many on-street spaces must be eliminated to improve traffic flow, and many more will have to be eliminated in the future.

2. The present one-hour limit on curb parking in many areas is too short. More off-street facilities are required for long-term shoppers.

3. The present rate of five cents an hour for on-street parking in the core area is too low to make off-street parking profitable.

As traffic volume increases, on-street parking must decrease and off-street parking take up the slack. This situation will remain in a state of flux for many years.

Revenues from both on-street and off-street parking must be combined in an integrated overall parking program. The Lewiston Parking District should administer this program. The District must be able to acquire land through eminent domain. Meter revenue over that needed for maintenance and enforcement should be used for development.



The two cities, linked by bridges, share a common traffic problem.

Although the old standpipe will soon be retired, this 750,000-gallon tank more than takes its place, holding almost one day's supply.

Greencastle's Water Works Are Flood Resistant

A flash flood forced reconstruction of this Indiana city's water works to new, sturdier standards

By JAMES O. SENEFF*

The residents of Greencastle, Ind., know what it is like to be without water. During preliminary investigations preceding a modernization program, a flash flood hit the city and completely disrupted all water service for three days. Potable water was hauled in from neighboring cities by the Indiana National Guard and service was restored within 72 hours through the Herculean efforts of water-works personnel. However, a flooded high-service pump station, suction well, and partially flooded well field greatly emphasized the need for a comprehensive water improvement program.

Nine wells made up Greencastle's water supply. Six of these were equipped with turbine pumps and three small wells had air-lift units. None of the wells had flow meters, but water-works personnel familiar with the installations indicated which wells were operating at or near original capacity. Using this information, we found it advisable to abandon the air-lift wells and test all except two of the others, which were operating satisfactorily. Table I shows a summary of the information obtained.

Because of the extremely poor performance and extensive repairs required, we also abandoned one of the tested wells. Past experience with another well indicated it could be improved. Cleaning with caustic polyphosphate, using chloride of lime as a wetting agent, boosted its capacity from 175 to 350 gpm.

For greater flexibility of operation and future capacity, we felt it advisable to reconstruct another well and to construct one new well of 1,000-gpm capacity. The new producer, constructed by Layne Northern using the reverse rotary method of drilling, is 54 feet deep with a 42-inch-diameter outer hole. A 38-inch casing extends to within ten feet of the well bottom. Ten feet of 26-inch Everdur screen extends below the outer casing with 15 feet of 26-inch blank casing extending up into the outer casing. Silica gravel occupies the space between the bore hole and 38-inch casing up to within ten feet of grade and between the 38-inch outer casing and 26-inch blank casing. The remaining ten feet between the bore hole and outer casing was filled with neat cement grout.

A 1,000-gpm Layne pump with 20-hp motor removes the water from the new well.

Motor Platforms Raised

We raised the discharge heads and motors of all pumps to put them above flood level for the flash flood established a new high in the vicinity of the pumping station and flooded all existing wells except two. We did this by erecting structural-steel platforms on the existing reinforced-concrete platforms. At the same time Sparling flow meters were installed to check the production of each well and insulation placed on all piping exposed to the weather for protection against freezing. A structural-steel platform similar to those supporting the existing wells also supports the discharge head and motor of the new well.

A new high-service pump station replaced the old facility and was constructed adjacent to it. A 120,000-gallon reinforced-concrete suction well serves as the foundation for the pump house and office build-

* Mr. Seneff is a staff engineer with the consulting firm of Paul J. Kleiser & Associates of Terre Haute, Ind., consultants for the City of Greencastle on the water improvement project.

The new high-service pump house is situated over a reinforced-concrete tank of 120,000-gallon capacity. All wells pump into this tank.

Flooding of the old pump station and clearwell in 1957, while preliminary investigations for improvements were being made, disrupted all water service for three days.

ing. Dividing the well into two units, with proper arrangement of piping, permits one-half to be taken out of service for maintenance without interference with plant operation.

The four Layne water-lubricated, vertical-turbine pumps have normal operating characteristics as shown in Table II.

Two pumps are installed in each half of the suction well with one of the 600-gpm pumps in each section. The pump sumps are so designed as to prevent turbulence and the formation of vortex action. Each pump discharge contains a Clayton non-slam check valve and an "APCO" air-release valve which automatically vents air that becomes entrapped at the pump discharge.

A Hercules L.P. gas engine connected to Pump No. 3 by means of a right-angle drive permits continued operation in case of electric power failure. This unit as well as an Onan 15-kw generator unit is manually started, the latter providing sufficient power to operate wells 6, 7 and 9.

The pump building, constructed of concrete blocks with red face brick veneer, houses the high-service pumps, controls, chlorination equipment and a combination office

Table I

CAPACITY OF EXISTING WELLS

Well	Diameter	Depth	Date Drilled	Capacity New (gpm)	Capacity 1957 (gpm)	Remarks
1	6"	37'	1936	275	80	
2	6"	69'	1936	350		Air Lift
3	6"	69'	1936	350		Air Lift
4	6"	69'	1936	350		Air Lift
5	8"	55'	1942	175		
6	42"x38"	54'	1954	600	540	Gravel Packed
7	12"	45'	1943	600	402	
8	12"	59'	1946	400		
9	12"	59'	1946	350	175	

Table II

HIGH-SERVICE PUMP CHARACTERISTICS

Pump	Capacity	T.D.H.	Nominal Speed	Motor
1	600 gpm	330'	1760 rpm	75 hp
2	600 gpm	330'	1760 rpm	75 hp
3	900 gpm	338'	1760 rpm	100 hp
4	1,500 gpm	360'	1760 rpm	200 hp

This interior view shows two of the four high-service pumps, including the one with the auxiliary gasoline engine, and the switchgear and control panel.

and laboratory. The only treatment required is that of chlorination, eliminating the need for a large installation.

Operation and Control

An integrated Autocon Plan-Pak control system simplifies operation. The high-service pumps start and stop by signals from a telemetering receiver connected to a pressure-range sensor at the new elevated storage tank. A change in the metering signal from the transmitter starts or stops the pumps according to a prearranged schedule. Sequence timing facilities prevent simultaneous starting of pumps after a power outage or low suction cutout and an automatic alternator alternates the starting sequence of the two equal-capacity pumps.

An electrode control system in the clearwell operates the well pumps according to demand. To avoid continually pumping certain wells and to provide more flexibility in operation, the well-pump control system comprises a number of transfer plugs that may be manually transposed to change the sequence of operation, with spaces provided for the addition of two more pumps.

An alarm bell rings and a red light goes on at the high-service pump station and the police station in case of tank overflow, low water in the elevated tank, suction well overflow or similar failure. The bell can be silenced but the light remains on until the condition is remedied. Since the pump station is unoccupied at night, the alarm system was also installed in the police station.

The two Wallace and Tiernan chlorinators, each having a capacity of 50 pounds per day, are arranged to supply the proper amount of chlorine in the suction well to correspond with the pump or pumps in operation. This is handled through a W & T step-rate controller.

Distribution

The existing 397,000-gallon standpipe, erected when the water works was first constructed, was no longer adequate so the improvement program included a new 750,000-gallon Pittsburgh-Des Moines double ellipsoid elevated tank. It is equipped with an obstacle light to warn low-flying aircraft and is painted light green to harmonize with the surroundings.

To augment the single 12-inch transmission line connecting the high-service pumps with the distribution system, a second 12-inch line, 8,000 feet long, was constructed from the pump station to the new elevated tank. Several connections between this line and the distribution system improves pressure and increases the flow in the distribution system.

Feeder mains requiring 5,600 feet of ten-inch, 9,700 feet of eight-inch and 4,200 feet of six-inch cast-iron pipe were installed to eliminate low-pressure areas and provide adequate mains for both current requirements and future expansion. All pipe for the transmission and distribution system consisted of Clow cast-iron pipe with slip-type joints.

The approximate cost of the various phases of the work was as follows: new wells—$9,000; plant (pump station and suction well)—$133,000; distribution work—$172,000; and elevated tank—$135,000. A revenue bond issue of $530,000 at 3¾% interest financed the work. Rates were raised approximately 35% in order to help amortize the bonds.

Upon completion of the project, the Board of Trustees and O. J. Stewart, Superintendent of the Water Department since the city took it over in 1935, held an open house. This was an important event for the 8,300 citizens of Greencastle, for most of them remember only too well the flood damage and water shortage of less than three years ago.

The development of multi-family, gracious-appearing residences like these has been provided for by Pasadena's R-R ordinance.

Pasadena Establishes an R-R Zone

. . . and salvages a fast-deteriorating ex-millionaires' row

By **PAUL A. SHAFFER**
Planning Director

The best way to cope with the speculative builder is to use the old western sheriff's advice and "get the draw on him." We did so in the redevelopment of our South Orange Grove Boulevard. However, we used what we call the R-R Zone instead of the six-shooter.

We don't want to imply that the term "speculative builder" connotes anything nefarious. Anyone building for profit can be termed a speculative builder. We are glad to see builders make a profit. However, in doing so, we want to see them erect quality buildings.

In the case of South Orange Grove Boulevard, we were faced with an avenue of dying estates built for another era. These great mansions had to have servants to function; with mechanization, and the great increase in wage levels, the estates no longer could survive. Many were deteriorating into boarding houses and a general torpor hung over what was once known as "millionaires' row." This was certainly not good, either for the residents in the area or for Pasadena.

Following many meetings and a good deal of research, we finally developed what we call the R-R Zone, meaning Restrictive Residence. Our object was to encourage new buildings that would harmonize with existing residences on the avenue and yet be useful under today's conditions. Many of the provisions are more restrictive than our R-1, single-family residence zone.

One of the key restrictions was the limitation to new construction only. This prevented conversions or boarding-house developments. Other key requirements were:

- **a minimum living area of 1,400 square feet for each apartment unit,**
- **3,000 square feet of land area per unit,**
- **a maximum of six units per building,**
- **a limit of three stories or 36 feet in height,**
- **one garage and at least one additional car space per unit,**
- **a minimum front setback of 40 feet,**
- **a minimum lot area of 12,000 square feet,**
- **a minimum lot width of 75 feet, and**
- **a review of all plans by the Planning Commission.**

At the time this zone was created, a question on its legality arose, particularly in regard to minimum floor area and new construction requirements. In order to avoid litigation, we instituted the R-R as an overlay zone, thus permitting the property owner to retain all rights of the original R-1 zone.

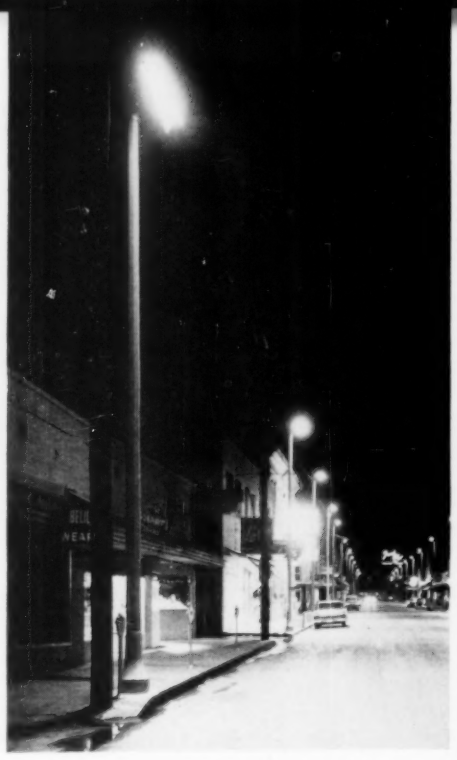
To date, the Planning Commission has processed over 30 applications for use permits on the boulevard. These involved 95 garden-apartment buildings containing a total of 415 units. Of these, 90 buildings containing 402 units have been completed.

The developers sold many apartments before construction started. Most are of the cooperative-ownership type. The average apartment size is 1,670 square feet, well over the minimum prescribed by ordinance, and the average cost per unit is $35,000. Monthly rental for the few projects not cooperatives varies from $250 to over $500. We estimate the value of the apartments constructed during the ten-year period since the R-R zone was instituted to be in excess of $15,000,000.

With the increase in longevity, higher standards of living, and increasing interest in travel, there would appear to be an ever-increasing market for this style of living. Not every city will have a need for our R-R zone, but we do suggest that it is a useful tool to rebuild an old area that still retains the charm and character of the city itself.

South Orange Grove Boulevard has a colorful history. It was the first land in Pasadena subdivided by the Indiana Colony and later became the starting point for the famous Tournament of Roses parade. The Valley Hunt Club, which originated the Tournament of Roses, is still located on South Orange Grove Boulevard, although in somewhat altered form. During the past year the Wrigley Estate was left to the city, and will serve as headquarters of the Tournament of Roses Association, as well as a tourist attraction.

Well Planned Lighting Is City Progress



Parallel-to-curb fluorescents on concrete poles.

By **E. B. KARNS***
Westinghouse Electric Corporation

Street lighting is one form of improvement from which all of the people benefit: the public benefits by reduced night-time accidents and crime; the local merchants benefit through increased business. It also enhances property values.

Good street lighting provides the quantity and quality of illumination required for accurate, rapid, and comfortable visibility at night. Its need is more acute today than ever before. Good street lighting is *cheap* compared with one serious traffic accident, one serious crime, or increased business in your town.

Every city and town should have a street lighting program looking forward five to ten years. It will tie in with traffic conditions, community development and residential safety. Make a city-wide survey to determine needs. Classify each street by use. Establish standards of lighting in accordance with industry standards for each classification of street, as given in the table Establish an order of preference based on need. Study equipment.

Since it is usually not possible to change over an entire installation at one time, the city-wide program and its costs can be scheduled over a period of years.

The poorest lighted streets should be scheduled for modernization first, and then the remainder of the city. Surveying the entire job in the beginning assures uniformity of light, equipment, and methods.

The lowest value at any point on the roadway should not be less than one-tenth of the values (in the table) for roadways carrying very light vehicular and pedestrian traffic and not less than one-fourth of the values for all other roadways.

As these are maintained values in the table, the job should be laid out for initial value of approximately 20% more than those above.

Plot on a summary sheet the present footcandle values. The test for footcandles should be in accordance with Industry Standards. Compare these values with those recommended in A.S.A. Standards.

Residential street lighting is becoming more important for security reasons. To curb the tide of burglaries, and attacks on people in the residential areas, good street lighting is a must. Statistics indicate that some 90% of all such crimes are committed during the hours of darkness. The records also indicate that most of these crimes occur in poorly lighted sections.

With the new light sources and optical systems it is now possible to provide higher levels of illumination much more economically than ten years ago. There are two basic types of light sources: the incandescent and the gaseous discharge. Of the latter, mercury and fluorescent are the most commonly used. The incandescent lamp appears to have reached its peak of efficiency.

The mercury lamp has gained wide acceptance. No longer need one think of the mercury lamp light as blue-green because these lamps are available with phosphor coatings which provide a number of variations of color. The mercury lamp generates three to four times the light output per watt as the incandescent lamp. It has exceptionally long life—eight to ten times as long in street lighting service as the incandescent lamp.

The leading manufacturers provide street lighting optical systems for virtually all of the different sizes of mercury lamps. This makes it possible to equip residential, heavy traffic streets, and main business streets with these new highly efficient long-lived sources. The street lighting luminaires for them are "optically sealed" and keep virtually all dust and dirt accumulation out of the optical system. This reduces the cost of maintenance. Relamping and cleaning need to be done only once in two years.

The mercury light source and its luminaire have become the workhorse of street lighting. On a per-footcandle - maintained - in - service

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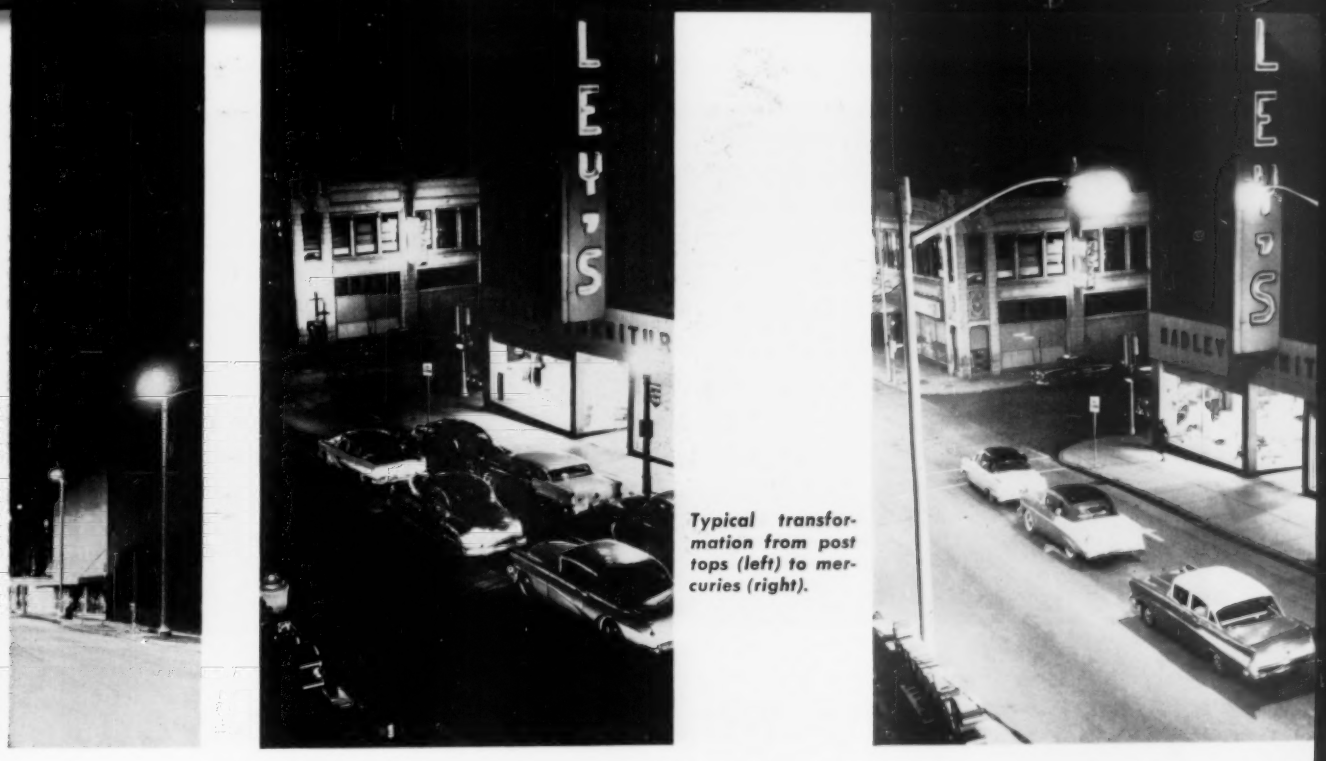
*Mr. Karns is Product Manager of Westinghouse Outdoor Lighting, Cleveland, Ohio. He has long been an authority on street lighting.



Typical transformation from post tops (left) to mercuries (right).

basis, it is far less expensive. This is particularly true for the main business streets and the heavy traffic arteries which account for the large volume of mercury lighting being installed.

In recent years, we have seen the use of tubular fluorescent lamps for street lighting. The fluorescent lamp has good overall efficiency and a long rated life, though its lumen maintenance and life expectancy are not nearly as good as the newer mercury lamps.

Due to the size of the fluorescent lamps, the luminaire, by necessity, must be a large unit. This makes it considerably more costly than either mercury or incandescent luminaires. On a per-footcandle-maintained-in-service basis, the fluorescent system will cost 50 to 100% more than a mercury system.

There is an entirely new concept in optical design for fluorescent street lighting. The luminaire mounts parallel to the curb. This puts the line of sight along the long axis of the lamp, reducing brightness and glare from the driver's viewpoint to practically nothing.

This new optical system employs a refracting lens for prismatic control. The reflectors direct the light out and across the street while the refractor directs the light laterally up and down the street. This increases the useful light directed to the roadway by 50% over earlier fluorescent units.

It is believed that this will be the future design of fluorescent street lighting luminaires. This type of lighting can be mounted lower, but the units must be spaced closer, approaching a continuous pattern or row of light down each side of the street. This installation can provide high levels of illumination without annoying brightnesses.

Unquestionably, street lighting of the future will be predominantly done by mercury and fluorescent sources. At present, mercury is the more economical. Improvements in the tubular fluorescent lamp and improved optical systems, such as a new parallel-to-the-curb unit, are closing the cost gap between mercury and fluorescent lighting. Fluorescent street lighting parallel to the curb provides comfort and an exciting technique of lighting that places those installations on the "deluxe side."

In any event, those charged with the responsibility for street lighting should, for economy alone, adopt the new outdoor lighting equipment.

RECOMMENDED MAINTAINED AVERAGE HORIZONTAL FOOTCANDLES
(Lumens per square foot)

Pedestrian Traffic	Very Light (Under 150)	Light (150-500)	Medium (500-1200)	Heavy to Heaviest (1200 up)
For pavements having reflectance of the order of 3%				
Heavy	0.9	1.2	1.5	1.8
Medium	0.6	0.9	1.2	1.5
Light	0.3	0.6	0.9	1.2
For pavements having reflectance of the order of 10%				
Heavy	0.6	0.8	1.0	1.2
Medium	0.4	0.6	0.8	1.0
Light	0.2	0.4	0.6	0.8
For pavements having reflectance of the order of 20%				
Heavy	0.5	0.6	0.8	1.0
Medium	0.3	0.5	0.6	0.8
Light	0.2	0.4	0.5	0.6

Everett's Short-Cut to Better Alleys

Money in escrow, spare-time labor and contractor cooperation combine to speed up alley and short street improvements

Property owners in Everett, Wash., can have a short street or alley improved without going through the long, drawn-out procedure usually required for this work. Furthermore, the work can be done under the "short-cut" plan at a considerable reduction in cost. Two basic conditions must be met before the work can be done: all of the property owners on the street or alley under consideration must be in favor of the project and they must put up the money in advance.

The checks or money for the improvements are placed in escrow, payable to the paving company or material supplier. In the case of short streets or commercial alleys, city street crews do all the preparatory work in slack time and a contractor applies the asphaltic-concrete surface. The money is used to pay the contractor directly, without passing through the hands of the city, and the city's contribution consists of free labor.

In the case of residential alleys, city crews are able to do all of the work with property owners' escrow money covering the cost of materials only. For this work, the street department utilizes a Miller Spreader, an L-W Adams grader and a Huber-Warco roller used mainly for routine patch work and general street maintenance. By using the small paver and donating labor, the city can cut the cost of laying the asphaltic concrete from that paid to the contractor by approximately $1.25 per ton.

Within the first month of the residential - alley improvement program, the city completed five alleys, each 400 feet long. Twelve more were on order and this number keeps growing as more property owners see the value of the improvements.

Although the work is done under the direction of the city engineer's office, the pavement is not laid to a specific cross section and grade as would be required under a Local Improvement District program. This, however, has certain advantages, for many alleys are of long standing and if paved strictly to grade would cause some dissatisfaction, for some garage entrances would be too high and others too low.

The engineering department gives the go-ahead when surveys show drainage will be properly taken care of and that the finished job will give good service. Storm drainage may be channeled down the center or to one side, whichever fits the case best. Property owners are interested in a good traversible alley without chuckholes, mud, or water running into their yards. This the city is giving them at an average price of $0.90 per lineal foot for each side of the alley.

In addition, several commercial alleys and short streets have been improved under the arrangement.

Interesting Start

Credit for the cooperative plan belongs to Public Works Commissioner George Gebert. Two years ago he made a campaign promise to do something about the city's 65 miles of unimproved streets, feeling that property owners properly informed of the Local Improvement District (L.I.D.) procedure would endorse it. But after numerous public hearings and cost estimates that all resulted in failure as far as improvement programs were concerned, he felt a new approach was necessary. Property owners wanted the improvements but with less red-tape and at a lower cost.

The "short-cut" idea came to him while observing the deplorable condition of a commercial alley within view of his office. This alley served two banks, a theatre, the local newspaper office, two drug stores and

Everett's "short-cut" improvement program (left) makes possible upgrading of residential alleys (right) at the low cost of about 90 cents per lineal foot for each property owner.

(Everett Herald photos)

This short street, improved under the plan, formerly required almost weekly attention throughout the rainy season—one example where donated city labor pays off in continuous maintenance savings.

several other business establishments. No property owner could be proud of this alley—yet he wondered whether they would be interested in paving it and pay cash upon completion, thereby saving money over the longer, more expensive ten-year L.I.D.

Further thought led to the idea of having city personnel do the preparatory work in slack time and have the property owners pay only the actual cost of laying the asphaltic concrete. The street superintendent and city engineer liked the idea and felt their crews could handle the city's share of the work. Savings to the city would accrue by means of reduced maintenance and cleaning. An estimator from a local paving contractor determined that $2,700 would cover the cost of actual paving if paid in cash upon completion of the work.

Armed with this information, Commissioner Gebert personally called each businessman located on and involved with this alley, inviting him to a meeting without divulging the purpose. At this meeting in his office he pointed out the poor condition of the alley and presented his plan. Within five minutes after the explanation was completed, the commissioner had $2,700 worth of checks on his desk from an enthusiastic group of property owners. Ten days later the alley was finished.

The same type of plan was presented to property owners along an unimproved road leading off the main highway at the edge of town. A large dairy, several apartment houses and some private homes fronted on this street. The plan was again presented in a series of meetings and accepted. City crews used fill-in time to do the preparatory work; property owners paid cash for the paving cost.

The third test constituted a four-block gravel street near the business district. Graders had to work this street three to four times a month during the rainy season. Property use on this street included a utility yard, skating rink and a transfer company. Several meetings regarding the plan resulted in complete approval—and submission of checks totalling $12,000. These were placed in escrow and paid to the contractor upon completion of the work. Here, too, the city's donation of labor will save money in the future by reducing maintenance costs.

The personal approach has a lot to do with the success of the program by showing the interest on the part of the city in trying to help both property owners and the city at the least possible cost. Commissioner Gebert continues to personally organize cooperative projects as various citizens express interest.

The city does not enter into actual financial contracts, for money thus received would have to go into the general fund and payments for the work, by law, would come out of the street maintenance and operation fund—which would soon be depleted.

Although enthusiastic about the plan, Commissioner Gebert is the first to admit that it is not suitable for long stretches of paving. It is strictly a short cut to improve short streets and alleys where property owners are sufficiently few to cooperate on a cash basis. Although the city does take a few calculated risks, the reduction in street maintenance work and the enthusiastic approval by property owners far overshadows this disadvantage.

A tractor (above) with large dozer blade compacts the refuse as soon as it is unloaded from the trucks.

At the end of each day (left) all refuse is given a cover of at least one foot of dirt.

Five-Year Program Upgrades Refuse Service

Riverside, Calif., modernized its collection fleet and changed a sanitary-landfill operation to extend the life of the fill site

By **R. M. ROSSI***
Director of Public Service

Better service at lower cost is our goal but staying within the budget while testing and introducing new ideas poses a real problem, particularly to a new Director of Public Service in a busy community. However desirable immediate changes may be, budgetary conditions often dictate that they be spread over a period of time. This was true in our case.

Riverside is a light-industrial city of 84,000 population in southern California. The residential area sprawls over 44 square miles of hills and valleys, with many sections over eight miles from the sanitary-landfill site. Pending annexation may add another 13 square miles to our collection area, all over 7 miles from the disposal site.

Several changes were necessary in order to render better service. Much of the collection equipment was old and the landfill site was rapidly being filled. Various operating practices could also be improved upon.

Equipment Upgraded

We gave first attention toward launching a five-year program to upgrade all equipment, to be followed by a continuing program to keep the fleet modern and efficient. Replacement times will vary with the type of equipment. To permit the use of larger bodies on the same wheel base, thereby retaining needed maneuverability in some of our hilly sections, all new trucks will be of the cab-over design. We also standardized on the 16-yard body, since this size can be filled twice daily by two men on a residential run with an average six-mile haul to the disposal site.

Our fleet at present consists of 30 trucks, with 23 packers assigned to residential routes. Six are Leach bodies, one Hyde-Pak, and the balance are Gar Wood's, all mounted on International and Reo chassis. The commercial pick-up is made up of six routes, on which we are using four trucks. We are using two trucks on a night shift and swing-shift basis on two routes.

Every truck is washed after the last day's run to keep it looking neat and clean, preserve the body and eliminate odors. For this purpose we poured a concrete slab at the landfill site and installed wash hoses. As a by-product, crews take more pride in keeping their trucks in good condition and this also reduces maintenance expense.

Pickup routes are laid out so each two-man crew can cover two routes in a seven-hour day. Men will go as far as 25 feet behind the back door to collect refuse. This relatively long walk has led to many innovations to reduce the number of trips from curb to can at each stop. One of the most prevalent, and least satisfactory, has been the use of large boxes, with ropes for handholds, which can

* Before coming to Riverside, Mr. Rossi spent 4½ years with the City of Salinas, Calif., as Assistant Public Service Director. Among his duties was the operation of two sanitary landfills for the city.

The use of large aluminum carry-out containers speeds up collections in the residential areas.

Daily washing of all vehicles promotes pride in the equipment and also reduces the cost of its maintenance.

hold the contents of several standard garbage cans. But this has resulted in very dirty clothing and too many back strains.

Here an idea picked up in another community served a good purpose. Light-weight aluminum containers, holding from 45 to 60 gallons, will usually take care of several residences. A large hook high on the side allows the collector to carry the weight on his shoulder and to lift it easily, eliminating danger of strains. The metal cannot get soaked and fall apart, strewing garbage all over a lawn, as will cardboard boxes. And the containers can be kept clean, helping the collectors keep their clothing in better condition. A few were given to those who wanted them, and now most have adopted them.

In 1947 the city purchased a 90-acre tract within the city limits and switched from an open dump to a sanitary-landfill operation. The site, gently sloping down to the Santa Ana River, has been filled at the rate of about seven acres per year. We expect it to last for another six or seven years.

We operate on the trench method, working across the slope and carrying the fill down the slope on a 500-foot front. The trench is cut about 40 feet wide and from eight to ten feet deep, or down to the water table, by a Caterpillar D7 Tractor pulling a #60 Caterpillar Scraper. The trench is extended as cover material is needed.

Previously, the entire day's refuse was piled the full height of the embankment, running down the trench only as long as required. Anothed D7 spread the refuse as it was dumped by the trucks, working it into a compacted mass until it was about six feet above ground level. Then the D7 and scraper brought up two feet of cover to seal in each day's cell.

Better Method Found

This procedure was sanitary, but did not result in a high degree of compaction for the layer of refuse was too thick. At the same time this posed a fire hazard from spontaneous combustion. Consequently we changed the procedure to a long thin layer of compacted refuse, only a few feet thick, covered by a foot of dirt at the end of each day. This allows the crawlers to pack the refuse tighter, and hold it firm with the cover. At the same time, the embankment will be raised to about ten feet above original ground level to gain more space. We expect this combination of greater compaction and greater height to add at least two more years of operation on the remaining area.

Spraying the site with water three times a week aids in dust control and compaction. Periodically it is sprayed with chemicals and insecticides for rats and insects. This has resulted in no complaints of our operation from area residents.

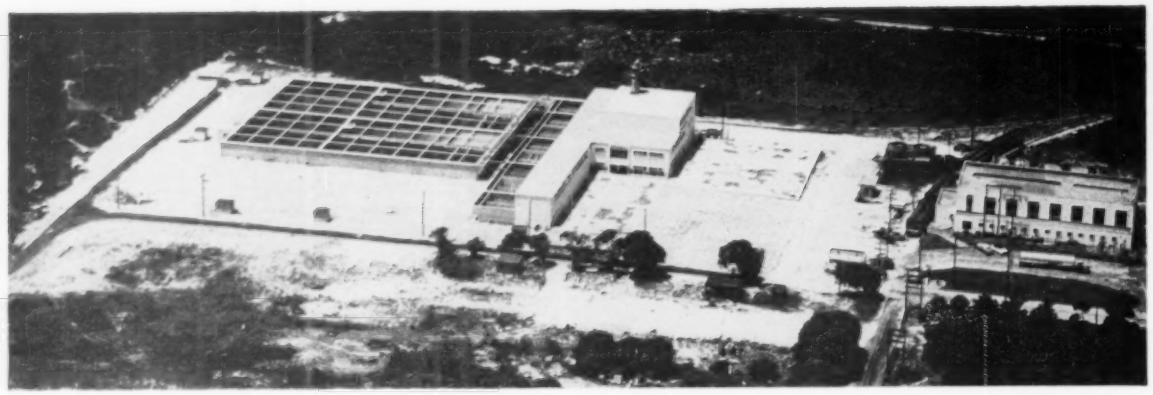
City trucks bring in about 100 tons of refuse daily. We keep the site open to the public on Saturdays, Sundays and holidays, but make charges during the week to cut down on outside traffic which interferes with the city trucks.

General scavenging is not allowed but a private concern does hold a contract to salvage cardboard from the commercial refuse brought in during the night. However, this salvaging must be done early in the morning and stop when the residential pick-up trucks start rolling in.

A rifle range, owned and operated by the city for police and youth programs, occupies part of the completed fill area. The city has no definite plans for final use of the area, although it will probably be used for a primitive area to coincide with a portion of the projected Santa Ana River Park.

The sanitation division is made up of 67 men operating under sanitation superintendent Errol Strickland. He is aided by the landfill supervisor, and W. L. Carter, J. Coles and A. Garcia, pickup foremen.

All funds for the department are provided by service charges, amounting to about $525,000 for the 1959-60 budget. Charges for the 25,000 residential units are $1.50 a month for twice-weekly service in Zone 1 and $2 a month for Zone 2 (over an eight-mile haul and some hilly areas). Additional charges are made for trash pickup, based on the amount of material. Rates for the 1,100 commercial establishments depend on frequency of service and volume of refuse. Wet commercial garbage is contracted out to private hog farms.



The close proximity of the water plant (left) to the city-owned power plant eliminated the need for standby power equipment.

Don't Say "Water Shortage" Here

Lake Worth, Fla., builds a water softening plant, develops alternate sources of supply, and provides for easy expansion of capacity

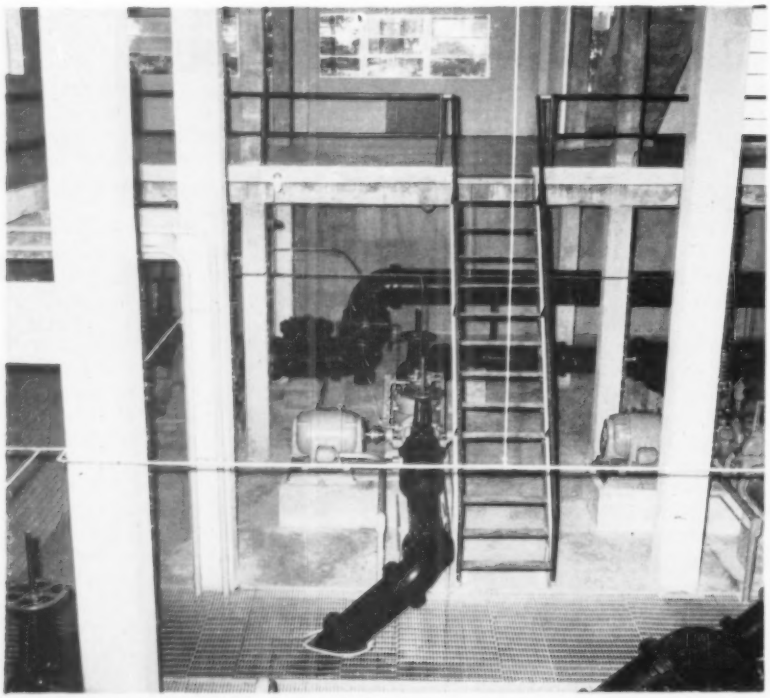
By **NANCY POWELL***
Public Information
Secretary

Better water and a new supply ready to be tapped when needed make up the major benefits of Lake Worth's water-improvement program. Constructed at a cost of $1.6 million, the new facility can readily serve the city for the next 10 to 15 years with its present capacity of 12 mgd. Capacity can be increased to meet the anticipated 16 mgd needed in 20 years at relatively little cost.

Taking advantage of the Florida climate, our engineers, Russell & Axon of Daytona Beach, designed the plant so that all basins and filters are located out of doors. The operating and control building provides ample room, eliminating the "cramped space" problem faced by many maintenance men.

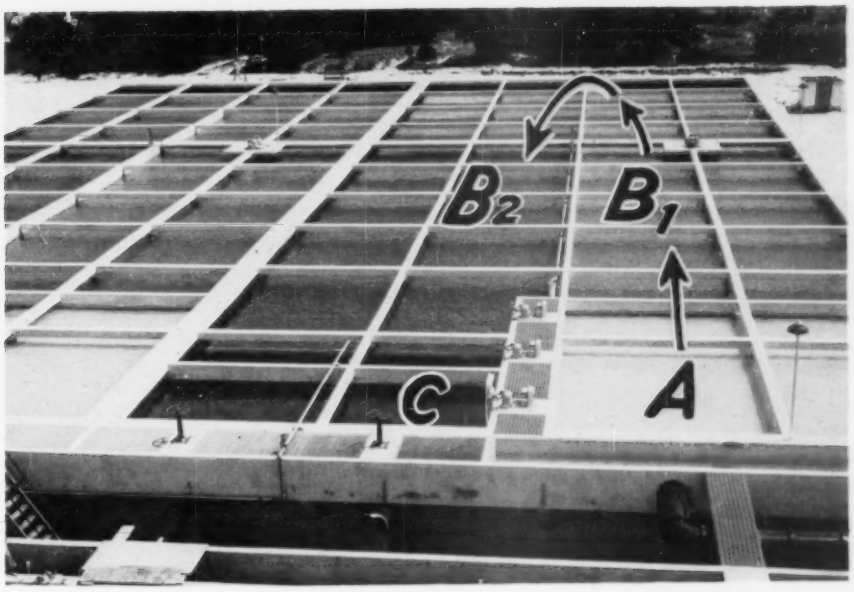
Additional savings that will pay dividends in future years include two filters, built ready to be equipped, facilities to receive all dry chemicals in bulk by rail (a feature now in use) and piping in place for two more high-service pumps.

Our present source of water is a field of 11 wells, varying in depth



Ample space in the pump room facilitates maintenance and general housekeeping.

* Mrs. Powell, Public Information Secretary for the City of Lake Worth, developed this article under the guidance of City Manager Tom G. Smith and Water Plant Superintendent Joe C. Woolf.



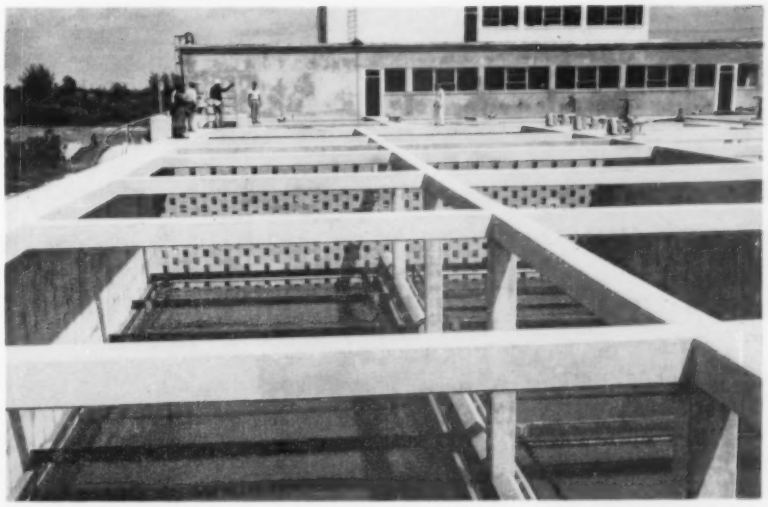
This overall view of the flocculation (A), sedimentation (B_1, B_2) and recarbonation (C) basins shows how they are divided into two sections to avoid a very long structure. The tanks at the left are duplicates of those marked.

from 92 to 144 feet and in capacity from 500 to 1500 gpm. These wells tap the Tamiami aquifer, a porous limestone formation lying along the Florida East Coast. The water, although potable, is hard and in some cases highly discolored. Until the new plant went into service, all we did was chlorinate the water. Now we soften it and remove most of the color. For example, raw water entering the plant averages about 220 ppm hardness and from 40 to 50 ppm of color. The finished product has from 75 to 85 ppm hardness and 10 ppm color.

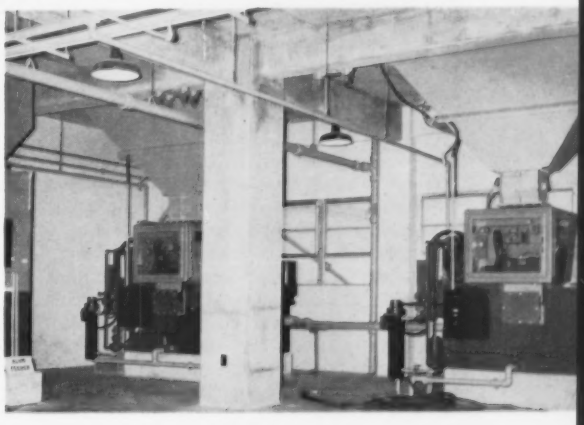
A second source not now being used but available at a moment's notice is Lake Osborne located along the western edge of the city about a quarter-mile from the plant. The intake structure, connected to an on-shore pumping station by an 18-inch reinforced-concrete pipe, sits in about six feet of water. A 16-inch reinforced-concrete pipe leads from the pump station to the treatment plant.

The pump station now contains two pumps but includes facilities for a third unit. Both pumps are Byron Jackson deep-well turbine units rated at 2,800 gpm each, against 40-foot head. Forty-horsepower Westinghouse electric motors drive each pump.

Treatment consists of rapid mixing, flocculation, sedimentation, recarbonation and filtration. The two combination flocculation-sedimentation-recarbonation units are each divided into two sections to avoid an extremely long structure. Each



Sludge collectors remove sedimentation from the forward part of the settling basins where most of the floc settles. Flocculators occupy the portion of the tank behind the baffle wall.



Large overhead storage tanks feed dry chemicals directly into the gravimetric feeders.

section is 40 feet wide by 240 feet long, with an average water depth of 12 feet.

In the picture on page 111, A is the flocculation portion equipped with three rows of paddle-type flocculators with three paddles per row. Sedimentation takes place in B_1 and B_2, with the heaviest floc settling out in the forward half of B_1.

Thus the first 90 feet is equipped with standard sludge collectors that push the sludge into a trough running transversely across the tank bottom at its approximate center. The tank bottoms slope toward this trough from both ends. Recarbonation takes place in portion C located at the effluent end of the second section. The rapid mixers, flocculators and sludge collectors are American Well Works equipment. Detention periods at design capacity of 8 mgd per unit is 30 minutes for flocculation, 6 hours for sedimentation and 20 minutes for recarbonation.

Of the eight filters, only six are equipped for operation at present. Each unit, approximately 27 feet by 31 feet in size, has a rating of 2 mgd at 2 gallons per square foot per minute. Equipment consists of Wheeler-type bottoms, Palmer surface washers (four per filter) and Builders-Providence controls. All gate valves throughout the plant are M & H units, pneumatically operated on the filter piping and manually operated elsewhere.

Filtered water flows into two interconnected, underground tanks; a 1,000,000-gallon reservoir and a 1,800,000-gallon clearwell from which the high-service pumps take suction.

Bulk Chemicals

Chemical feed equipment consists of four Omega units (one for alum, two for lime slaking and feeding, and a Rotodip unit for carbon), and four Wallace and Tiernan machines (a chemical feed pump for sodium silicate, an existing silactor, and two chlorinators, one of 500-pounds-per-day capacity and the other of 1,000-pounds-per-day capacity). The dry chemicals are received in bulk by rail and the chlorine in one-ton containers.

A Fuller Company Dracco pneumatic unloader transfers lime and alum from the railroad cars to storage tanks located on the floor above the feeders. Carbon is dumped into an underground mixing tank through an opening located between the rails. Here it is mixed into a slurry and pumped to the feed tank on the third floor.

A single Gas Atmospheres generator provides carbon dioxide for recarbonation.

The pump room at present houses five American Well Works units with U. S. Motors. Standby power is not provided since the city-owned electric power plant is adjacent to the water plant making it easy to run emergency lines between the two installations.

Four of the pumps are high-service units, two rated at 5,000 gpm at 160-foot head and two at 2,500 gpm at 160-foot head, powered by 300-hp and 125-hp motors respectively. The fifth pump, used for filter backwashing, has a capacity of 5,500 gpm at 45-foot head and is driven by a 75-hp motor. All are centrifugal pumps.

Each pump discharge line includes a pneumatically and electrically operated Golden Anderson check valve followed by a manually operated gate valve. Discharge is directly into the distribution system and two 300,000-gallon elevated tanks floating on the system.

The contractor broke ground in 1957 and completed the project 18 months later in March 1959. It presently serves 16,000 people requiring an average of 3.5 mgd. However peak days of 8 mgd are not uncommon. A revenue-bond issue provided the financing.

The project was completed under Mayor R. T. O'Connor and City Manager Tom G. Smith. Joe C. Woolf, Water Works Superintendent, is in charge of plant operation.

Circular Police Building for Philadelphia

The sketch shows the design and location of Philadelphia's new circular police building.

A compact headquarters accommodating all Philadelphia, Pa., police offices and facilities now scattered over many floors of City Hall, has been designed. It is a single building with two circular wings. Study of the design by Geddes, Brecher and Qualls shows that curved exterior walls are highly efficient in providing the most usable office space for the least area of exterior wall.

The ground floor will be exclusively for processing prisoners. The first floor will house a communications center and the second floor will be devoted to records and central files. The other two floors will contain administrative offices and laboratories.

The architects studied outstanding police office buildings throughout the country. They made field trips to new ones in San Francisco and Los Angeles. Their studies indicated that the curved form of building is more efficient than any other type of building. It provides 80% of usable floor space compared with 70-75% in those of conventional design.

The ability to mount snow plows gives the village, in effect, two more pieces of equipment to handle this important function.

Whether it's dirt or snow . . .

Double Duty Sweepers

. . . keep Massapequa Park's streets clean on a year-round basis

By **CHARLES HART**
Supt. of Public Works

Whether it's summer's dirt, winter's snow, or sand left over from ice-control activities, our two sweepers are on the job almost daily cleaning the streets and village parking lots of Massapequa Park, N. Y. Their ability to mount snow plows is of prime importance, for most of our residents commute to New York City, making it necessary that we clear the streets early in the morning for them to reach the railroad station or the main highways. In effect we have two extra plows without the added expense of additional trucks or tractors.

The village has grown from a population of 2,500 persons in 1950 to 23,000 in 1960. Despite this rapid growth, essentially all of our 58 miles of streets are paved. Rapid growth still continues, but with only 3.5 square miles of area within our corporate limits, the village is fast approaching the saturation point. Nevertheless, streets must still be built, resurfaced, sealed and repaired, and here too the sweepers play their part.

Routine Work

One of our two Mobil-Sweepers covers the business area every morning from Tuesday through Friday and on Sunday, starting at 4 a.m. Sweeping the business area early Sunday morning leaves it clean for the people passing through on their way to church or just taking a Sunday stroll.

The second machine spends most of its time in the residential area, working a regular day shift from 7:30 a.m. to 4:00 p.m. from Monday through Friday We do not attempt to sweep any given area at specific time intervals, but rather cover the various streets on an as-needed basis as determined by frequent inspections. This takes care of the more heavily traveled streets or the construction areas where dirt and debris accumulate more rapidly.

Our big problem is extremely flat street grades—about 90% of our streets have grades of only 0.2%. During heavy rains, sand often washes into the streets and remains there. Following severe storms, both sweepers first work the business area, operating in tandem. The sweeper regularly assigned to the business area also sweeps in the residential areas during the latter part of the morning.

Drainage is another problem. Fortunately the village is about 85% to 90% sewered (storm), thanks to

Two sweepers, working almost every day, keep both residential and commercial streets in Massapequa Park clean throughout the year.

an extensive program conducted over the past five years. Because of the flat gutter grades, runoff is relatively slow, so during and immediately following heavy rains we send several two-man crews through the village to remove debris from catch-basin grates and clean out clogged basins.

Extra Duties

During the winter months both sweepers are equipped with Good Roads reversible trip-type plows. The plow hoist is connected directly to the sweeper hydraulic system and actual mounting is simpler than that used on our regular trucks. The men like to operate the sweeper-plow combination better than the truck plows because of the shorter wheel base and greater maneuverability. We have plowed up to 12 inches of snow with these units without difficulty. Although the units can sweep with the plows mounted but raised, we usually remove the blade between storms. This is a simple procedure.

Preparing streets before and cleaning up after seal-coating operations is another sweeper job. Although actual seal coating is normally done by contract, village forces prepare the street in advance. We also pick up the excess bluestone chips several days after seal coating and stock pile this material for use in shoulder construction or stabilization work.

The streets in the business area consist chiefly of a four-inch stone base surfaced with 1½ inches of plant-mix asphalt. Many of our through streets are constructed in the same manner. On these streets the sweepers average about 22 curb miles per eight-hour shift (the eight hours includes routine maintenance time).

Our residential streets are chiefly stabilized soil with two or more seal coats using blue-stone chips. Because of the rougher surface, daily sweeping mileage on these streets is less than on the machine-surfaced streets. Other conditions such as the amount of dirt and debris also affect sweeping mileage each day.

Good Maintenance

Each operator is responsible for checking his sweeper on a daily basis as well as routine lubrication of chains and other essential parts. About once a week the entire unit is steam cleaned and completely lubricated. Oil changes are also made at regular intervals.

We feel such preventive maintenance pays dividends. Although the units become dusty shortly after hitting the road, regular steam cleaning does remove caked dirt, grease and the like, and gives the operator an opportunity to check the machine thoroughly.

We use natural fibres for the main broom but do not fill our own brooms since we can have this work done at a modest price. One extra broom is always kept in stock. Since the conditions of our streets vary considerably, as does the surface roughness, and since we use the sweepers for various purposes, it is difficult to establish average broom life. Thus we have never attempted to do so.

Our people are interested in having clean streets, and this we give them. Using the sweepers for snow plowing helps justify the use of two machines in a residential village the size of Massapequa Park. Seldom are the units idle.

Regular maintenance includes steam cleaning about once a week, followed by complete lubrication.

Tin cans, broken glass and even small nails are retained on the continuously-moving shaker screen of the converted rock-picker.

Reduced power-takeoff on the tractor output and the addition of jumbo tires enable the operator to sift a strip 56 inches wide and 6 inches deep at five to six miles an hour.

We Modified A Rock Picker

. . . to keep six miles of ocean-front beach constantly clean in Newport Beach, Calif.

By L. W. COVERT
Director of
General Services

Our seaside resort community of Newport Beach in southern California has solved the long-standing problem of beach maintenance through the modification and use of some common and relatively inexpensive agricultural equipment. Among other duties of our department, we must maintain over six miles of ocean front which is used by as many as a half million people each week-end during the summer season.

To handle most of Newport's beach-maintenance operations, we now use a modified Lockwood rock-picker pulled by a diesel-powered John Deere tractor equipped with oversize tires (for beach traction) and a special reduction gear to permit high-speed operation on the beach.

We have tried every imaginable piece of equipment within the economic possibilities of our budget. We've used modifications of hay rakes, screen drags, and have tried many variations of hand-picking. None has done the kind of job needed to keep a popular beach safe.

A Big Job

This beach cleaner must pick up the remains of campfires, broken bottles, beer cans and water-borne debris. In addition to this the unsightliness of paper cups, newspapers and other rubbish must be removed. Last year our beach-cleaning crew carted away as many as 30 cubic yards of such rubbish a day and still was unable to remove the nails and pieces of broken glass that were more than an inch or two below the sand's surface.

The modified rock-picking machine is doing a far better job than was done before. It is cleaning the sand to a depth of six inches and is removing all foreign matter larger than a half-inch in length. Most important, it is doing this at a tremendous saving in manpower and time.

The only modification required on the rock-picking machine was the addition of a fine-mesh shaker screen which was laid over and secured to the existing heavy shaker. In order to move at a reasonable speed of five to six miles an hour during cleaning operations a 2-to-1 reduction gear was added to the power take-off of the 730 John Deere diesel tractor, reducing the output rpm from 540 to 270.

To assure traction on the soft sand the standard 14x30 tires were replaced by 18x26 farm-tread low-profile Goodyear tires.

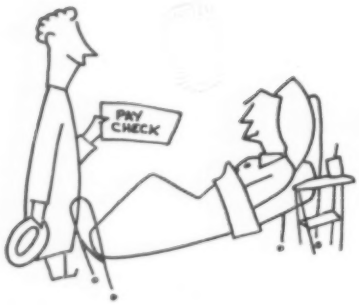
Moving at five to six miles an hour, the picker cleans a strip of beach 56 inches wide at a depth of from four to six inches and continuously dumps sifted debris into a steel hopper at the rear of the shaker chain. The hopper can be dumped automatically by the tractor operator. The equipment is all mounted on rubber tires and can be moved quickly and safely along highways. When not involved with beach-cleaning operations, the tractor can be used with other maintenance equipment.

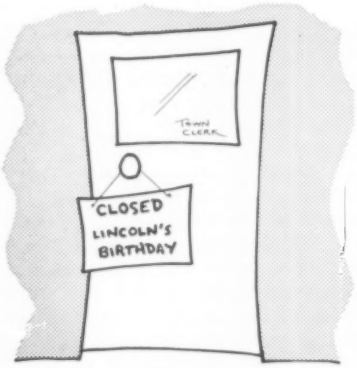
EDITOR'S NOTE: In Newport Beach, the maintenance of parks and beaches is the overall responsibility of the Park, Beach and Recreation Department, but the work is actually done by the General Services Department, which has the necessary equipment.

Fringe Employment Benefits

. . . help to attract and keep good employees in municipal governments, Connecticut study shows

By **ROSALINE LEVENSON**, Research Assistant
Institute of Public Service, University of Connecticut





About half of Connecticut's towns and cities, large and small alike, have recognized the recruiting power and morale-building aspects of fringe-benefit programs, and provide their public employees with most of the protective type of benefits. Eighty out of the state's 169 municipalities make some form of group medical insurance available, and 75 offer one of the three types of retirement systems: locally-sponsored and controlled plans, the Connecticut Municipal Employees' Retirement Fund, or Social Security. 45 towns and cities have sick-leave provisions.

Two-thirds of the municipalities which use full-time police and firemen furnish uniforms or initial allowances to police; only one-third, however, to firemen. Many of the municipalities provide maintenance allowances.

The holiday and work-day schedule is the most liberal of all benefits offered by Connecticut towns and cities. A majority of the towns observe 11 or 12 legal holidays; their salaried employees work only seven hours per day. Most of the towns under 20,000, however, tend to keep administrative offices open on Saturday, and hourly-paid workers usually put in eight, and frequently nine, hours. Vacation allowances generally consist of two weeks after one year of service, although some of the smaller towns grant only one week. After five or more years, about one-third of the municipalities give three weeks vacation. In 16 of the 169 municipalities, vacation time can accumulate.

These fringe benefits, however, do not compare with those granted by the Connecticut state government or the federal government. Their vacation and sick-leave policies are more liberal; longevity pay increments are provided, and cash suggestion awards are authorized.

The benefits of Connecticut municipalities are at variance with those of Connecticut private industries. The privilege of accumulating vacation and sick leave is limited in private companies, with only occasional exceptions. Pay increases usually are based upon periodic review of the company's entire wage structure, and only seven or eight paid holidays are granted.

Where Industry Leads

However, while private industries give fewer benefits than government units for time not worked, they give many more cash benefits in the way of bonuses, profit-sharing plans, and shift-differential payments. They pay more for overtime and holiday work, and frequently contribute toward most of the cost of medical insurance and retirement plans. Government employees, by contrast, generally receive compensatory time for extra work and they themselves must bear the largest part of insurance and retirement costs.

Avenues still remain open to Connecticut towns and cities which would enlarge fringe benefits without unduly large costs. For example, state law permits the extension of Social Security and unemployment coverage to all municipal employees. Municipalities also can extend certain privileges, such as permission to accumulate sick leave and vacation time, and they undoubtedly would gain by recognizing meritorious and superior performances of their employees through a system of commendation awards.

Completed in 1956, this conduit sends Colorado River water directly into the Santa Ana River at a point just upstream from the water spreading areas. Discharge capacity is 450 mgd.

Imported Water . . .

. . . plus a meter on each well and a "water-extraction tax" provides protection to Orange County, Calif., ground-water supplies

Since 1953, the Orange County Water District's ground-water recharge program accounted for more than $3.2 million in revenue, financed the purchase of nearly 520,000 acre feet of ground water, and apparently has halted salt-water intrusion in its tracks. Also, water tables have risen as much as ten feet in two years and the *ad valorem* tax formerly used as sole revenue for purchasing water has been reduced to a more comfortable level. Most important of all, however, is the assurance of ground-water supplies for years to come.

The basis for this program is compulsory metering of the area's 3,300 ground-water wells and a replenishment assessment on their output. The idea started in the water-scarce summer of 1952, when a group of citizens met to discuss possible solutions to the pressing water shortage problem. They faced an alarming drop in water level in the area's agricultural wells—a drop that totaled more than 44 feet in 12 years before it was arrested at 21 feet below sea level—and salt-water intrusion of as much as four miles in some areas, despite the purchase of nearly 100,000 acre feet of emergency ground water with funds from an onerous *ad valorem* tax.

Responsibility for execution of the program rests with Howard W. Crooke, secretary-manager of the Water District, a public agency established in 1933. Basically, the program consists of three elements:

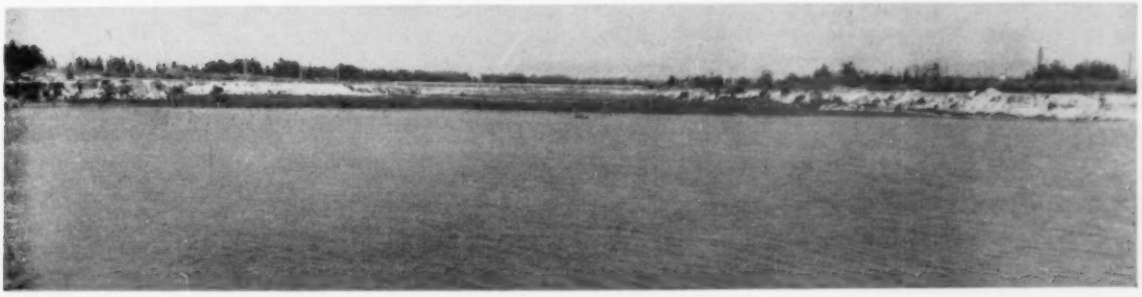
1. A requirement that ". . . it shall be unlawful to produce water from any water-producing facility . . . unless such water-producing facility . . . has a water-measuring device affixed thereto capable of registering the accumulated amount of water produced therefrom."

2. A replenishment assessment—familiarly known as an "extraction tax" or a "pump tax"—levied each year on ground water produced to cover anticipated purchases during the ensuing 12 months. The resulting revenues represent a revolving fund which can be used only for the purchase of ground water to maintain well levels throughout the area.

3. An *ad valorem* tax—limited to eight cents per $100 of assessed valuation—whose proceeds become part of the district's general fund, used to finance capital expenditures and to replace ground-water over-draft.

In complying with the first requirement of the program, a vast majority of the area's well owners turned to engineers of the Hersey-Sparling Meter Company, with office in nearby El Monte, for technical assistance. Although accuracy was the prime factor, instrument and installation cost was vital.

While some installations required special equipment, the low-pressure line meter fulfilled the necessary requirements in most cases. These instruments ranged from two to 14



The last downstream pond of the district is this "anchor" unit in the water spreading works which is currently handling 210 mgd.

inches in diameter with capacities from 30 to 3,000 gallons per minute.

In addition to helping the overall program, metering of the wells resulted in certain side benefits. At the time legislation was passed, less than 250 of the more than 3,300 wells were metered, thus few well-owners knew the true cost of irrigation from year to year. With meters, well-owners could now determine accurately pump efficiency and make corrections or changes where warranted. In addition, with a knowledge of irrigation requirements and a means of determining the amount of water pumped, they can avoid over-irrigation and thereby conserve large quantities.

The meters are also useful in tracing the underground movement of water throughout the area, thereby contributing to the "storehouse" of information required by district officials in planning for the years ahead. The totalizers on each meter permit the accurate tabulation of ground-water production within an area as small as one square mile.

The second phase of the ground-water recharge program, the replenishment assessment, is based on the judgment of the district's directors as to the amount of water to be imported during the following year for ground-water replenishment. If, for example, they decide to purchase 80,000 acre feet to supplement natural flows at a cost of $10 per acre foot, they will need to raise $800,000 to finance it. If, also, the board anticipates a total extraction of 225,000 acre feet for the ensuing 12-month period, the directors will have to make a "replenishment assessment" of $3.56 per acre-foot ($800,000÷225,000). The enacting legislation, however, requires a 10% delinquency allowance; thus, the rate is boosted to $3.92 per acre foot of ground water from each well within the boundaries of the district.

This "extraction tax" is supplemented each year by a second source of income to the district—the *ad valorem* tax which represents the third element of the district's program. Funds derived from this levy are used not only for capital expenditures, maintenance and operation, but also for the replacement of ground-water overdraft accumulated in the last few years.

In all, Orange County agencies have purchased 890,000 acre feet of Colorado River water from the Metropolitan Water District of Southern California. Of this amount, 540,000 acre feet—including the 520,000 acre feet imported by the Orange County Water District—have been used for ground-water replenishment; the remainder has been used directly.

Orange County has grown from 216,000 in 1950 to more than 700,000 people today. To provide adequate water supplies not only for today's customers, but also for the 1.4 million residents expected by 1980, the district has made a long-range plan.

Using a portion of the *ad valorem* tax proceeds, district officials purchased approximately 800 acres of land for use as water spreading areas. Additional acreage has been provided for under the terms of agreements with other agencies and can be developed when needed.

A typical installation is this Sparling totalizing water meter registering ground-water production from a well pump driven by a gasoline engine. The extraction tax is based on actual water pumped.

Of the acres now owned by the district, 725 are located along a seven-mile reach of the Santa Ana River channel overlying the recharge portion of the district basin. Planned maintenance of this area is designed to obtain the greatest amount of percolation possible through economical means — both from natural flows of ground water during the year and from the Colorado River water purchased and discharged into the river under the ground-water replenishment plan.

This imported water is handled in two ways. One system consists of a series of spreading ponds 10 to 15 acres in area which cover the major portion of the river channel and are connected by a single bypass channel. As incoming water flows through this latter channel, it is routed into each of the ponds in quantities that will maintain the highest possible levels and result in the greatest amount of wetted surface. While this system has been used extensively and gives reasonably good results, the rate of percolation becomes reduced as silt settles from the water and seals off the surfaces of the ponds. Hence, much maintenance is needed.

The second system consists of a series of temporary levees parallel with the main side levees and spaced at predetermined distances that will result in a minimum of side-levee scouring and meandering when water is released.

Combining these two methods has increased efficiency. Placing the ponds at the downstream end of the spreading works allows for a high spreading rate with a minimum of maintenance. This combination takes advantage of the river's gradient, which is steep enough to keep velocities at a rate that permits silt deposits to be picked up and dropped at the lower end of the system. There it can be removed from the surface and disposed of at a minimum cost; or, as is the case currently, sold at a profit.

Two land parcels located outside the river channel make up the remainder of the district's wholly-owned acreage. These are currently under development as spreading areas which eventually will be connected directly into the facilities of the Metropolitan Water District, so that a large portion of the water imported during any given year can be brought in during the winter months when demands are lowest. These two supplemental ponds will also permit the drying out of the river area each summer; it will then be better able to absorb the winter and spring runoff.

Both areas will be surrounded by five-foot dikes to keep out any local runoff and the accompanying silt and clay, thereby reducing maintenance costs to a minimum. The district anticipates that the larger of the two off-channel spreading areas will handle approximately 150 cubic feet per second continuous inflow for a period of six months each year.

The purpose of the Orange County Water District's original ground-water recharge program is a continuing one. It is successful because adequate supplies of ground water for all inhabitants and land-owners within the boundaries of the district have been assured for years to come and the program is being carried on with realistic financing shared on a proportional basis by those receiving either direct or indirect benefits.

SPECIAL REPORT TO CATERPILLAR OWNERS:

CAT CATERPILLAR

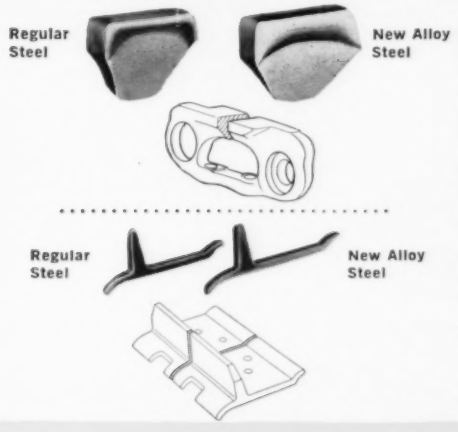
Parts you can trust
...cost less per hour

OPTIONAL TRACK GROUPS

up-date D9 or D8 Tractors for longer undercarriage wear

Now, two types of track groups are available for older model D9 and D8 Tractors . . . regular and optional, allowing you to tailor your undercarriage parts to meet job conditions.

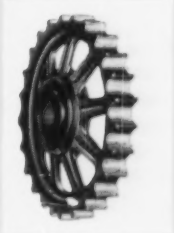
Lighter tones at top of etched cutaways show depth of special hardness in wear zones.



REGULAR track parts are made from durable steel. They're heavy-duty, long-lived, special-hardened to resist wear.

OPTIONAL track parts are equivalent to those used on current production model tractors. The links and shoes are made from Caterpillar's new alloy steel that is hardened much *deeper* than regular steel. Link rails are hardened twice as deep. Shoe grousers are hardened 400% deeper. The new alloy steel also provides greater strength with more impact resistance.

MORE METAL WHERE IT COUNTS. Optional components are king size. Every part is beefed up and made bigger with more *hardened* steel in wear areas.



BORALLOY "HUNTING TOOTH" SPROCKETS are another new feature of the optional groups. Every other tooth is used in one revolution, alternate teeth being picked up the next revolution. This alternation means that teeth contact the bushings only *half as many times* as do regular sprocket teeth. More important are the teeth themselves—they're *machined* for exact fit with the big bushings. This greatly extends bushing life.

COMPARE regular and optional track components:

	Pitch	Pins O.D.	Bushings O.D.	Track shoe bolts and nuts	Sprocket
D8	regular 8 inches	1 3/4 inches	2 3/4 inches	3/4 inch	14 tooth
	optional 9 inches	2 inches	3 inches	7/8 inch	25 tooth
D9	regular 9 inches	2 inches	3 3/16 inches	7/8 inch	28 tooth
	optional 10 1/4 inches	2 1/4 inches	3 3/8 inches	1 inch	25 tooth

HOW MUCH MORE LIFE? Variation in the length of track life occurs because components have different wear rates under various soil and job conditions. In sand, pins and bushings wear faster. In rock, shoes and links wear faster.

ON-THE-JOB TESTS confirm that the new optional track components are giving up to 40% more life than the regular parts. On many applications, you can expect even greater wear life.

CORRECT TRACK GROUP SELECTION IS IMPORTANT. It depends on job types and conditions. Let your Caterpillar Dealer analyze your track needs. He'll recommend the correct components to help you get maximum life at the most reasonable investment. Call him soon.

SERVICE TIP: **FREE!** Handy reference for ordering track options. "New Options for D9 and D8 Tractors" includes part numbers that are used to adapt to your older models. Pick up a copy at your Caterpillar Dealer's.

CATERPILLAR

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Caterpillar Tractor Co., General Offices
Peoria, Ill., U.S.A.

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Experience has proven that municipalities and other governmental units can save important budget money when they switch to Rambler for their fleet requirements. Why not investigate Rambler's proven savings today?

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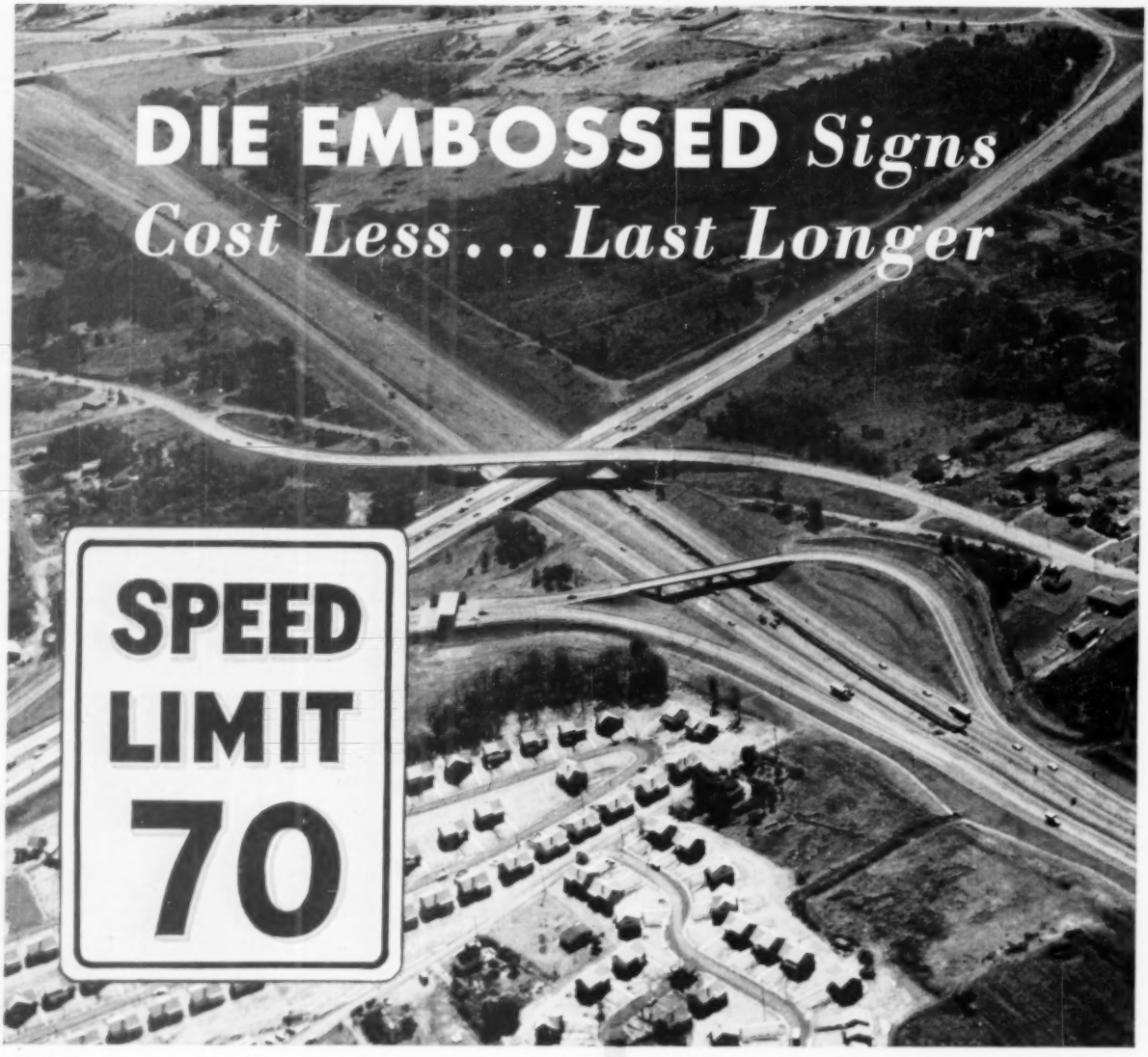
14250 Plymouth Road, Detroit 32, Michigan

Helicopter — The Latest Police Tool

View of the Los Angeles Freeway from the Hiller Copter that patrols it five days a week.

Turn to page 123 for story ⟶



Millions of dollars will be spent on signs for the magnificent new highways we are constructing today. Let's buy the best . . . DIE EMBOSSED signs last longer, cost less. In state after state, die embossed signs, both plain and reflectorized, have met the test of time . . . and are easy to maintain. The next time you order signs, remember —

Die Embossed Signs *are your* Best Buy

Die Embossed signs are easy to refinish. A new coat of paint makes the background look like new . . . a roller brings out letters and borders to their original brilliance. The job can be done in minutes while the sign remains on the post.

- S. G. ADAMS COMPANY, ST. LOUIS 3, MO.
- GOPHER STAMP & DIE CO., ST. PAUL, MINN.
- GRIMM STAMP & BADGE CO., ST. LOUIS, MO.
- LYLE SIGNS, INC., MINNEAPOLIS, MINN.
- MIRO-FLEX CO., INC., WICHITA, KANSAS
- N.S.E. SIGNS & STAMPINGS, B'HAM, ALA.

Helicopter—The Latest Police Tool

By CAPTAIN PETER F. HAGAN
Los Angeles Department of Police

With the purchase of a Hiller 12C helicopter, the Los Angeles Police Department has established an aerial link between its Patrol, Detective, Traffic, and Administrative Units. A Special Problems Unit handles the new Hiller and it is manned by veteran helicopter pilots who are members of the Department. These men are available at all times and receive a hazard bonus for their highly specialized job.

The whirlybird has proved to be one of the most versatile pieces of equipment used by the Traffic Division and is adaptable to many police services. Los Angeles, with its 468 square miles of unusual topography, is a natural for helicopter use.

The Patrol Division has used it to police the city parks, reservoir, foothill areas and River Bottom.

When an Accident Occurs

Traffic forces use it daily during peak traffic hours to make observations on the freeways, to avert congestion and to eliminate hazards conducive to poor vehicular flow. When an accident occurs, the crew radios for assistance, suggests a route for emergency vehicles to reach the scene and outlines alternate streets to avoid unnecessary traffic jams. The landslides at Pacific Palisades, the crowds from the Hollywood Bowl and the Coliseum are a few of the more recent events when the helicopter proved invaluable. It is used to make aerial surveys during these special events.

"Operation Windmill" has been a big help to investigators in tailing suspects, checking isolated areas for an escapee, a pilfered safe or abandoned vehicles. Felony suspects who decide to "hole up, and shoot it out" with the Los Angeles Police face a new peril from the sky. Tear gas is dropped into chimneys or through roofs; in so doing the ground officers do not have to risk their lives. Surveillance, especially in Los Angeles traffic, is a difficult job for detectives, but it is a routine task for the air-borne officers.

Recently the copter was used to full advantage in a public relations and recruiting program. The Hiller on display and its crew in full dress answered questions and passed out literature to all interested.

Safeguarding Mr. "K"

At emergencies and special events the big bird has proved its true worth. When Russia's Mr. "K" visited southern California the air-borne command post was the key to the nation's number one security problem. From his platform in the sky the security chief directed the operation with all the ease and efficiency that the citizenry expects from the nation's finest. President Eisenhower saw fit to compliment personally Chief Parker and staff for a job well done.

The copter crew calls the sig-alerts (public notice of a problem that affects many) daily in heavy Los Angeles traffic, saving time, money and frayed nerves for thousands of motorists. They divert traffic by suggesting alternate routes to the public via radio.

In a metropolitan city like Los Angeles beset by torrential rains and lacking an adequate drain system the Hiller is a respected ally of police. Every rainy season its crew is called on to aid stalled motorists or to direct evacuation and rescue work.

In the event of a major disaster that disrupted street traffic, it would in all probability be the only piece of equipment that could be used effectively. Rescue work at the scene, medical supplies, food, clothing and personnel could be readily taken care of in an airlift by estimating the total situation. Manpower, too, can be deployed more effectively.

Recently the police crew cooperated with the Fire Department by making reconnaissance runs over the holocaust that swept the Hollywood Hills. The fire chief was taken aloft to direct his men on the fire lines. Despite the fact that water and ground equipment were a problem, the fire was contained in a relatively small area. The over-all picture made evacuations and back fires possible with no loss of life.

Close-up of the Hiller 12C.

The Hiller 12C is a three-place aircraft and was purchased by the city on April 16, 1956. The primary duty is to patrol the freeways during peak traffic hours, five days a week. It flies at an altitude of 1,500 to 2,000 feet. In an emergency it can drop lower for a better view.

A typical monthly recap submitted by the helicopter unit reads:

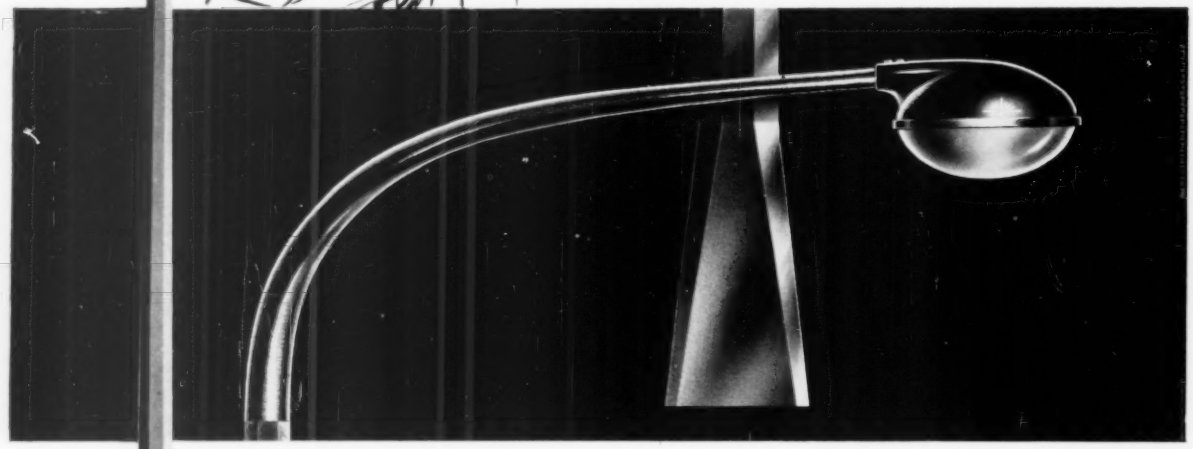
	Incidents Reported		
Stalled Vehicles	**49**	**Traffic Accidents**	**20**
Sig-alerts	**15**	**Fires**	**5**

(Continued on page 125)

Classic beauty
with
super-strength

Millerbernd

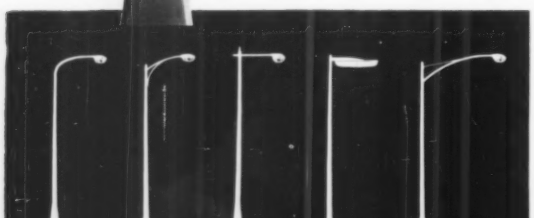
Elite* Octa-Tubes



Get all the facts about modern street lighting!

This new booklet explains how modern lighting will benefit your city or development. Describes the complete line of Millerbernd lighting standards, with engineering specifications and recommendations. *Write for it today!*

*



Elite *Conventional* *Parkway* *Fluorescent* *Long-Span*

Five modern styles available

Booklet gives complete descriptions and engineering specifications.

NO OTHER lighting standard matches the clean design of the Elite Octa-Tube. It is styled simply . . . to stay modern through the years.

But there is more than beauty. The tapered arm is attached to the *top* of the pole . . . will not disengage when pole is under heavy impact. Its gentle curve forms a natural wireway, free from sharp bends.

The integral base is rugged (made from steel 50% heavier than the pole itself) . . . and because of its height and tapered design, is able to withstand the impacts of hardest service.

Elite Octa-Tubes have fewer parts . . . only 9 (compared with about two dozen in a conventional standard). And of course, all Millerbernd standards are fabricated of *extra-strength* steel!

Millerbernd

MANUFACTURING CO.
WINSTED, MINNESOTA

(Continued from page 123)

A typical weekly report of activity:

Requested sig-alerts on three freeways occasioned by heavy traffic . . .

Requested sig-alert occasioned by vehicle on fire on the Hollywood Freeway . . .

Radioed request for freeway motor officers to re-route traffic from Silver Lake Boulevard to allow free entrance for fire vehicles and tow trucks . . .

Patrolled fire in Griffith Park Area. Traffic conditions and movements of the fire were reported. The fire chief was taken aloft for an over-all view of the fire. The chief directed operations from the air . . .

Brush and trees on fire in a residential area were reported. Blaze observed as it started near San Bernardino Freeway. Fire units and motorcycle officers to handle problem requested . . .

Flight over Highland Park area disclosed vehicle partially over side of hill. Ground unit requested to investigate . . .

Flight over Sepulveda Dam observed wearing apparel in remote spot. A landing was made, the clothing was collected and booked into Valley Division as "found property" . . .

Checked out two cars abandoned on the fire road in the remote section of Topanga Canyon, directed West Valley traffic cars to the scene.

The original investment of $40,000 is small in comparison to the many accomplishments of the Hiller. When one realizes that each minute of traffic delay on the freeway costs L. A. motorists $320, the $51.60 per hour cost for flying time (of which about 30% is salaries) is relatively small.

The helicopter is a modern and effective police tool; its versatility and operational cost more than justifies its purchase.

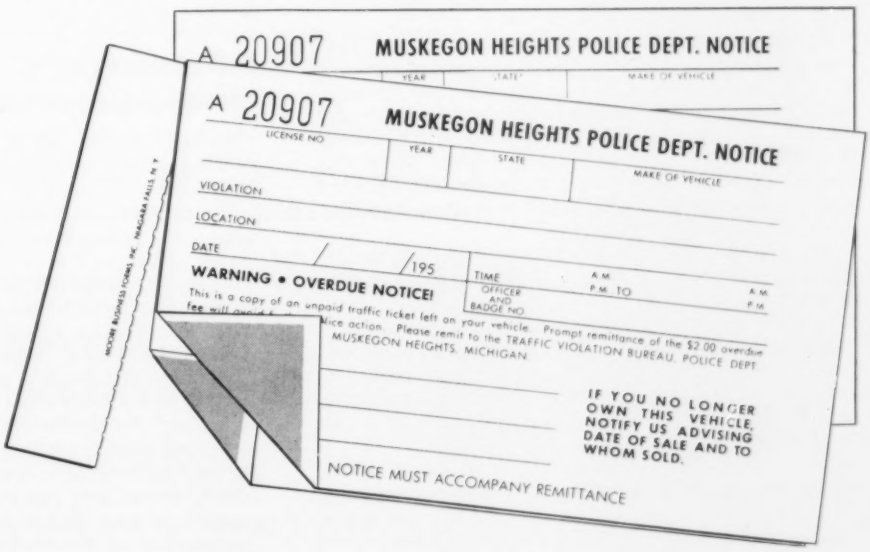
A Three-Way Traffic Ticket

We are getting better results here in Muskegon Heights with a newly redesigned traffic ticket in three parts. Parts one and two have heavy carbonized backs, eliminating loose carbon papers, and they are joined at the bottom as a set when detached from the stub. When a traffic violation occurs, the officer fills in the form, and because of the carbonized backing, the data are written onto all parts. Part three is then removed and put in the violator's windshield wiper. Parts 1 and 2 are turned in to the Traffic Violation Department and held for seven days.

If the motorist pays the fine within this period, parts 1 and 2 are then destroyed. If not paid after seven days, the name and address of the violator are secured from the Department of Motor Vehicles and entered on the bottom of the form. Part one is then mailed to the violator in a window envelope. If the fine is still not paid, a warrant is obtained based on the information from Part 2, which is retained as file and information copy. This form is simplicity itself. The three parts serve three functions: as an initial notice of a violation; as a follow-up on the non-payment of fine; and as a filed copy on which a warrant has been based. One writing has completed our entire file.

Elimination of loose carbons avoids littering the streets, reduces our form costs, and results in a positive carbon impression that eliminates any misunderstandings which arise when a carbon is used over and over again. Each copy has a fresh, clear carbon copy of the original sheet.

J. Donald McMillan
Traffic Violation Clerk
City of Muskegon Heights, Mich.



This is the new three-part traffic ticket adopted by Muskegon Heights.

The Nation's Capital Tries Radio Traffic Signals

Deputy Director Francis Twiss of the District of Columbia takes note of the radar screen pointed out by John Fussell, Motorola regional manager.

Traffic experts in Washington, D. C., think they have found the answer to one of that city's most pressing problems. They have installed radio signals to regulate traffic lights along a four-mile stretch of Connecticut Avenue, one of the city's main thoroughfares.

Radio-controlled traffic signals are a fairly recent development on the municipal scene. In addition to Washington, they are currently in use—or under consideration—in Wayne County, Mich., Alexandria, Va., New York City and other cities named on page 707 of the 1959 Municipal Index.

Now that traffic signals have been revamped in the nation's capital, a motorist can drive a previously congested route without stopping, even during rush hours. Gone are the days of clogged intersections and snail-paced traffic. Francis E. Twiss, Deputy Director of Traffic, Engineering and Operations of the District of Columbia, reports that the signals on the radio-directed portion of Connecticut Avenue are set for speeds ranging from 28 to 32 miles an hour during rush hours. This means that all traffic moves in a well-regulated, speedy progression. Between the groups of downtown and uptown-bound cars, trucks and buses, major intersections are clear to allow cross-town traffic to move efficiently, too.

Test drives on Connecticut Avenue during rush hour have revealed that the four-mile route can now be traversed in eight to ten minutes. In general, this system of radio controls has proved so successful that a similar system has been installed on 16th Street, another heavily-traveled route. Present plans call for the eventual installation of Motorola radio-directed traffic signals on all major arteries leading to downtown Washington.

The question that follows "Will it work?" is usually "How much does it cost?" This question is best answered by a specific illustration. The interconnection, by means of underground conduit, of three intersections located along 16th Street N.W., was conservatively estimated at $10,000. Under the new radio-tone transmittal system, the same three intersections were tied directly into the central control system at a cost of $1,400 each.

The master control center for the system is located in the District of Columbia Highway Department Shop. Signals sent by a radio transmitter there are picked up by antennae installed at intersections where there are traffic signals. The system is activated by punched paper on which time sequences for the signals have been recorded. For example, three traffic arrangements are currently in use on Connecticut Avenue. One regulates the signals during peak traffic hours in the morning, another during the evening rush hours and a third during the non-rush period. Additional sequences to cover traffic patterns during rain, snow or other unusual situations may be added in the future.

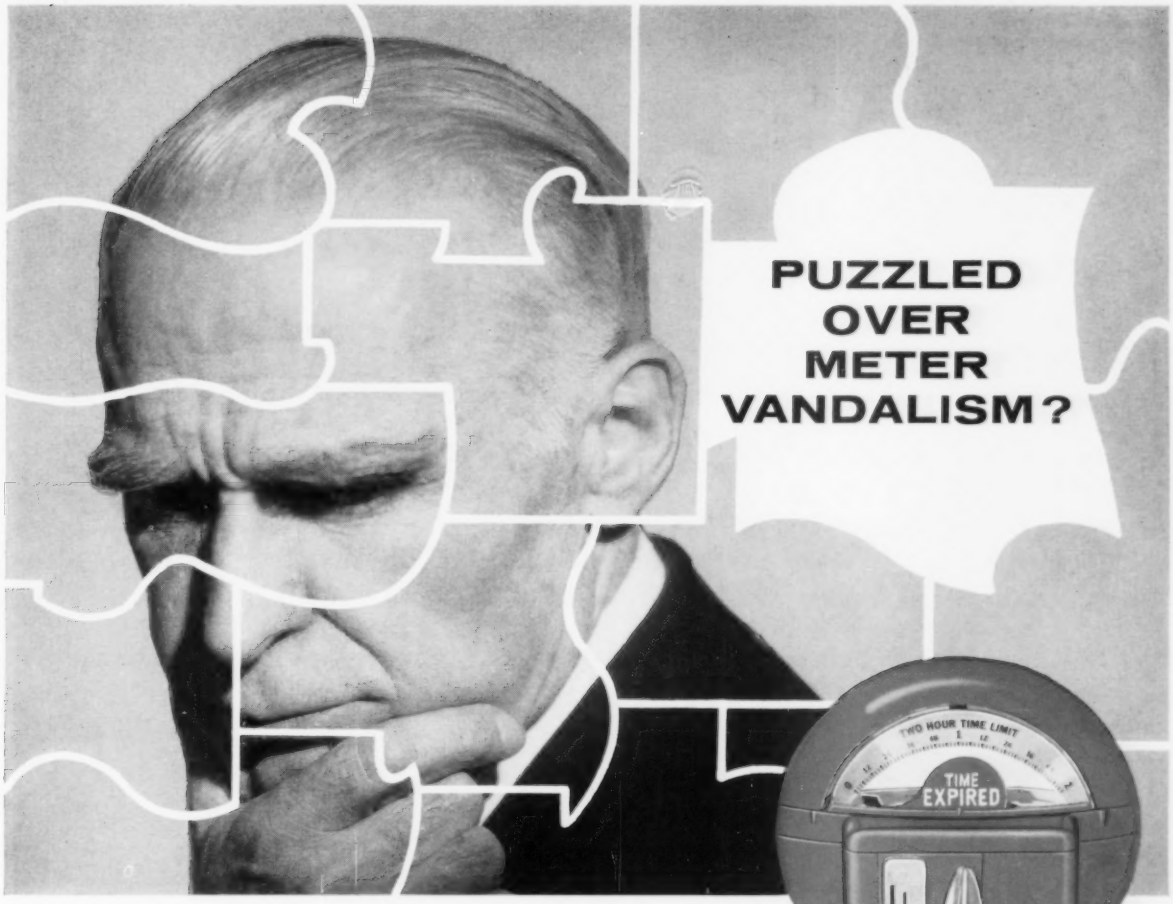
Pittsburgh's Underground Garage

Formal opening of a new 750-car underground parking garage at Gateway Center, Pittsburgh, Pa., took place on September 28, 1959.

The underground garage consists of three levels, each with sloping floors to permit more efficient utilization of space.

It will be operated by Parking Service Corporation, 6th and Bigelow, Pittsburgh, Pa., which operates other downtown parking lots and garages.

Equitable Plaza, completely landscaped, will be downtown Pittsburgh's second natural beauty spot, joining forces with Mellon Square Park to provide "open air" for downtown. Equitable Plaza is being developed atop the underground garage and is named for the Equitable Life Assurance Society of the United States, owner and operator of Gateway Center, the complex of new office buildings which has become the "showpiece" of Pittsburgh's renaissance.



LOOK TO THE DUNCAN V.I.P.*

World's only parking meter tested and approved by Underwriters' Laboratories, Inc., Burglary Protection Dept.

City budgets cannot afford continued losses due to expensive vandalism and theft of meter revenues. Exhaustive tests prove Duncan "V.I.P." is the answer to this serious ever-increasing problem.

Purposely created to combat the costly destruction of vandalism, the Duncan "V.I.P." represents the highest degree of security ever found in a parking meter.

A free trial, with no obligation, will convince you—write today.

TWO HOUR TIME LIMIT
TIME EXPIRED
INSERT COIN. TURN HANDLE TO RIGHT AS FAR AS POSSIBLE AFTER EACH COIN.
A DUNCAN METER
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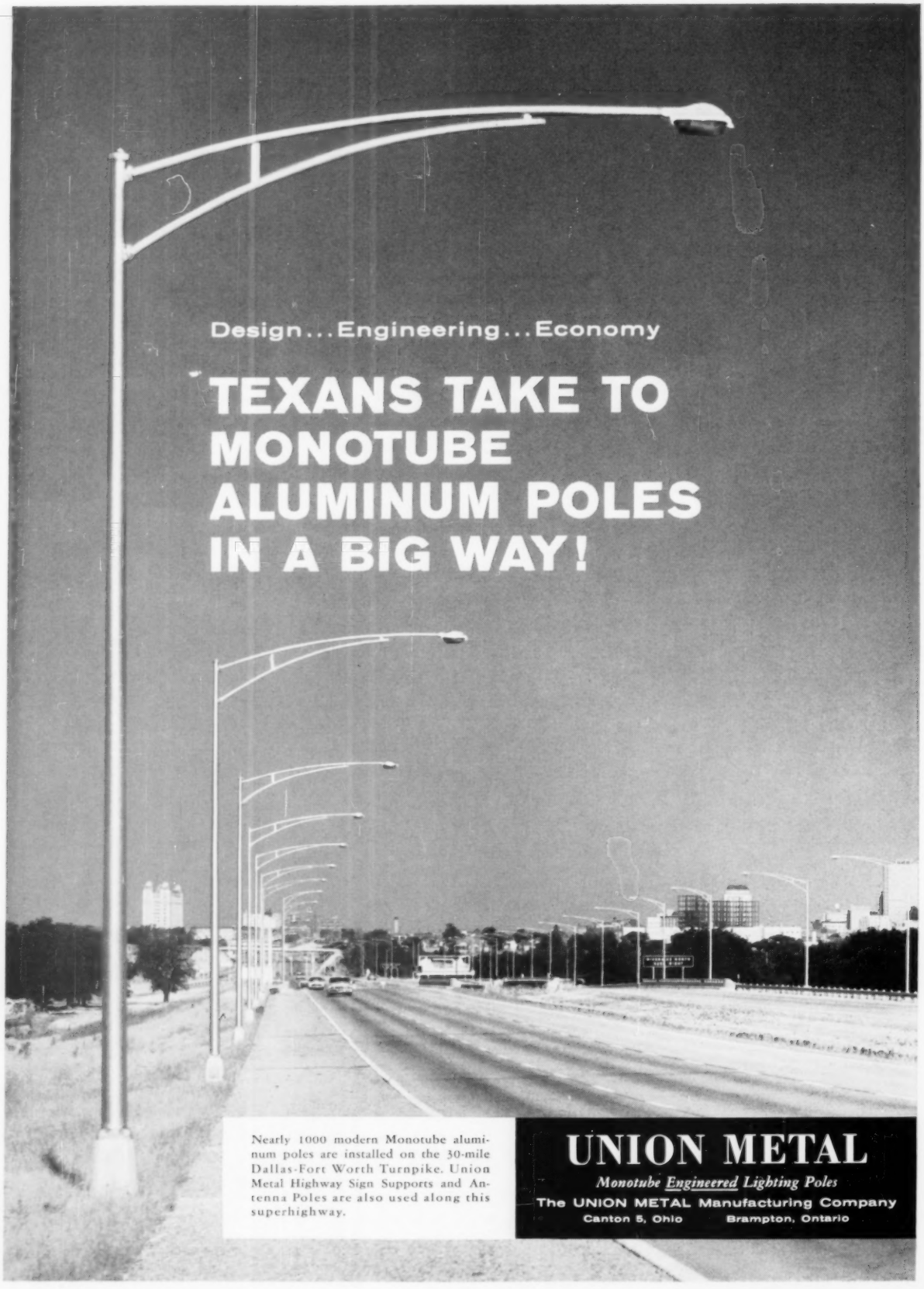
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The mercury-vapored road to the Great Smokies; this is Gatlinburg, Tenn.

Brilliant Gateway Cities Beckon to the Smokies

By W. W. MYNATT
City Manager
Gatlinburg, Tenn.

W. W. Mynatt

The "gateway" cities to the Great Smoky Mountains National Park—where remain virgin forests and Cherokee culture—are strictly modern in lighting.

Two-thirds of the 3,000,000 annual visitors to this tourist playground enter through the southeast Tennessee towns of Sevierville (population 1,620) and Gatlinburg (population 1,803).

Both communities have made tourist movement more convenient with fine lighting systems. On Park Road (US 441) outside Sevierville, for example, there have been no fatal accidents since the lighting was installed four years ago. Both towns realize too, that good lighting helps night-time business since shoppers find it more convenient to come out at night.

Fluorescents for Sevierville

In Sevierville, city officials sampled both mercury and fluorescent equipment and settled on fluorescent for reasons of visibility, comfort, and modern appearance. The first installation of nine four-lamp, six-foot luminaires was hailed by the public, merchants, and city officials. The city soon called on Hugh C. Blair, manager of the Sevier County Electrical System, to

Park Road (U. S. 441) in Sevierville, Tenn., carries thousands of travelers each year through the city and toward Gatlinburg and the Great Smoky Mountains National Park.

PRISMO ...c'est magnifique!

Such international fame must be deserved!

The Champs-Elysées in Paris has been called the world's most beautiful street; Prismo LifeLine has been called the world's most reliable reflective traffic striping. Prismo's consistently brilliant performance in a world on wheels, is overcoming language barriers, crossing national boundaries, changing traffic marking traditions on both hemispheres.

Every type of traffic artery on three continents . . . North and South America and Europe . . . is now benefiting from Prismo LifeLine's 24-hour dependability and enjoying the economy and durability of pavement markings that guarantee longer life and greater safety than ever before. From superhighways to city streets Prismo is the undisputed world leader . . . easy to apply, quick to dry, tough, flexible and moistureproofed for weather resistance. Traffic engineers of many nationalities agree on this: Prismo LifeLine is the best safety striping investment on the world's markets today.

Parisian "ouvriers" put down Prismo LifeLine on picturesque Champs-Elysées . . . only one of many world-famous streets and highways safety-marked with Prismo reflective materials.

PRISMO

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add 16 luminaires on Main Street. This plus the lighting on Park Road (U.S. 441) led to a total installation of 57 General Electric units.

The luminaires are mounted 25 feet high on existing poles with overhead series circuits. Spacing varies according to street width. On six-lane, 50-foot-wide Main Street and Park Road, they are spaced at staggered intervals of approximately 75-to-100 feet. On the 34-foot-wide business streets spacing was 100 feet, one-side.

Mercury for Gatlinburg

Gatlinburg's choice was General Electric 400-watt mercury vapor luminaires. The original installation on Parkway in 1954 was followed by the lighting of Roaring Ford Road and Airport Road in 1956. Subsequent lighting of other arterial and traffic streets brought the total to 180 mercury vapor units.

In most areas, the units are mounted on one side only at heights of 27 feet and at intervals of 75-to-100 feet. Color-improved mercury lamps are used with an overhead, ballastless circuit. Photoelectrically-controlled, straight-series substations supply 25 lamps on each circuit. Sevier County Electric Service owns, maintains and energizes the lighting on a contract basis with each city.

With progressive civic and business leadership—and plans for continued expansion—the hopes of these Tennessee towns are as high as the nearby Smokies and as bright as their well-lighted streets.

Fine Lighting, Ample Space Simplify Parking

One of the nation's largest and most striking shopping centers, Lenox Square, was recently opened in Atlanta, Ga. It has 53 diverse stores, virtually duplicating Atlanta's downtown shopping facilities.

The parking area provides spaces for 6,000 automobiles. Using General Electric's new luminaires on 118 Kerrigan continuous-tapered, octagon-shape lighting standards with twin arms, the entire parking area is well lighted. Suspended from the lighting standards are colored balls. A different color is used in each of five parking lots so that customers can identify the location of their cars.

Lenox Square was designed by the Atlanta architectural and engineering firm, Toombs, Amisano & Wells. The consulting engineer was Eugene Guerrero, Dallas, now a partner in Toombs, Amisano & Wells.

After only four months operation, Vice-President and General Manager John D. Smith reports that the use of lighting is already paying its way.

"When a shopping center first opens," he said, "many curiosity seekers drop by after dinner just to browse around. If they like what they see and find shopping a convenience, they'll come back. But the lights do much to bring them in in the first place. A shopping center without modern lighting would be like putting a service station in the middle of a cornfield."

At Lenox Square, shoppers have no problem in picking out a parking place in the 6,000-car lot and the 236 General Electric mercury-vapor fixtures provide daytime convenience for after-dark shoppers.

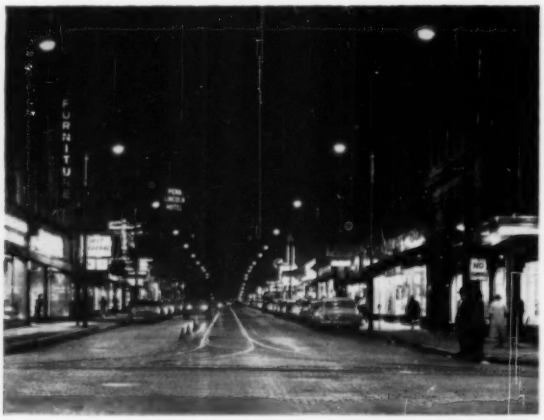
Edward E. Noble, president of Lenox Square, Inc., says, "We feel the combination of modern lighting and simplified traffic movement throughout the parking area is the best drawing card we have. Not only does the lighting allow people to drive in and out of the parking area with safety, it also permits them to leave packages in locked cars with less fear of thieves and vandals breaking in. So far we have had no reports of burglary from parked cars."

Installation was simplified and costs reduced by use of the "powerpack" luminaire with its built-in ballast. The ballast built into the slipfitter mounting reduces further wiring. Maintenance also is easier with this all-in-one luminaire and re-lamping is required only once every two years.

Colored balls on Kerrigan twin-arm standards identify the locations of cars in the parking area of Lenox Square.

Twin-arm units to the number of 118 light the 6,000-space parking area.

Night shopping was not so good when Penn Avenue looked like this under 6,000-lumen incandescent lamps.



It's said to be much better now that 20,000-lumen color-improved mercury illumination has been installed.

Planned Street Lighting in Wilkinsburg, Pa.

A planned street lighting system is one of the surest ways to make your community a better place in which to live, says the Duquesne Light Co., in its August *Electric Topics For Municipalities.*

Good street lighting inspires community spirit, stimulates community growth, discourages crime, promotes business, and reduces traffic accidents.

The Borough of Wilkinsburg, Pa., population 31,000, is one of the most recent communities in the Pittsburgh area to enjoy these benefits. The Wilkinsburg Council realized that adequate street lighting is necessary to community welfare. They asked Duquesne Light to prepare a master street lighting plan for them. The plan included a survey of existing conditions, an analysis in terms of present-day and future requirements, and then, recommendations for improvements. The result: an up-to-the-minute, planned street lighting system tailored to community needs.

Preliminary to New Street Lighting

Many papers have been written on the basic design discussions which go into the development of a street lighting system. It is a popular subject.

While I am not an expert in this field but merely a member of an engineering firm which is sometimes faced with the task of actually preparing plans and specifications for a street lighting system, I have reviewed some excellent and authoritative papers delivered recently by men who are experts in the street lighting equipment field. Here are the problems:

What are the specific bounds of the area to be lighted? Where the street lighting is incidental to other improvements, should it be the entire downtown business section? It is the engineer's first duty to set the actual bounds and confer with others, often a city council.

What standard of illumination shall be provided? "The same as on Washington Street?" The same as in "Central City?" Does this mean the same style of fixtures or the same amount of illumination?

Volumes of pedestrian traffic and vehicle traffic must be determined. If the city has a zoning plan, the type of zoning may be used to establish pedestrian traffic rating for each block to be lighted. Likewise, traffic counts furnished by the state highway department, projected for, say, 20 years, may be used to establish the vehicle counts for illumination-rating purposes.

Sometimes, particularly in a downtown business area, a community desires lighting far in excess of the maximum recommended by the Illuminating Engineering Society. Perhaps the best known recent example of this is on State Street in Chicago, where illumination of 14-footcandles is provided. This is said to be the highest level of illumination ever provided by a street lighting project. It is difficult for an engineer to justify such lighting, for he is generally concerned with public safety and public convenience. However, merchandising interests are sometimes desirous of the illumination in excess of that required for public safety and are willing to pay for it. It is then the engineer's duty to provide it.

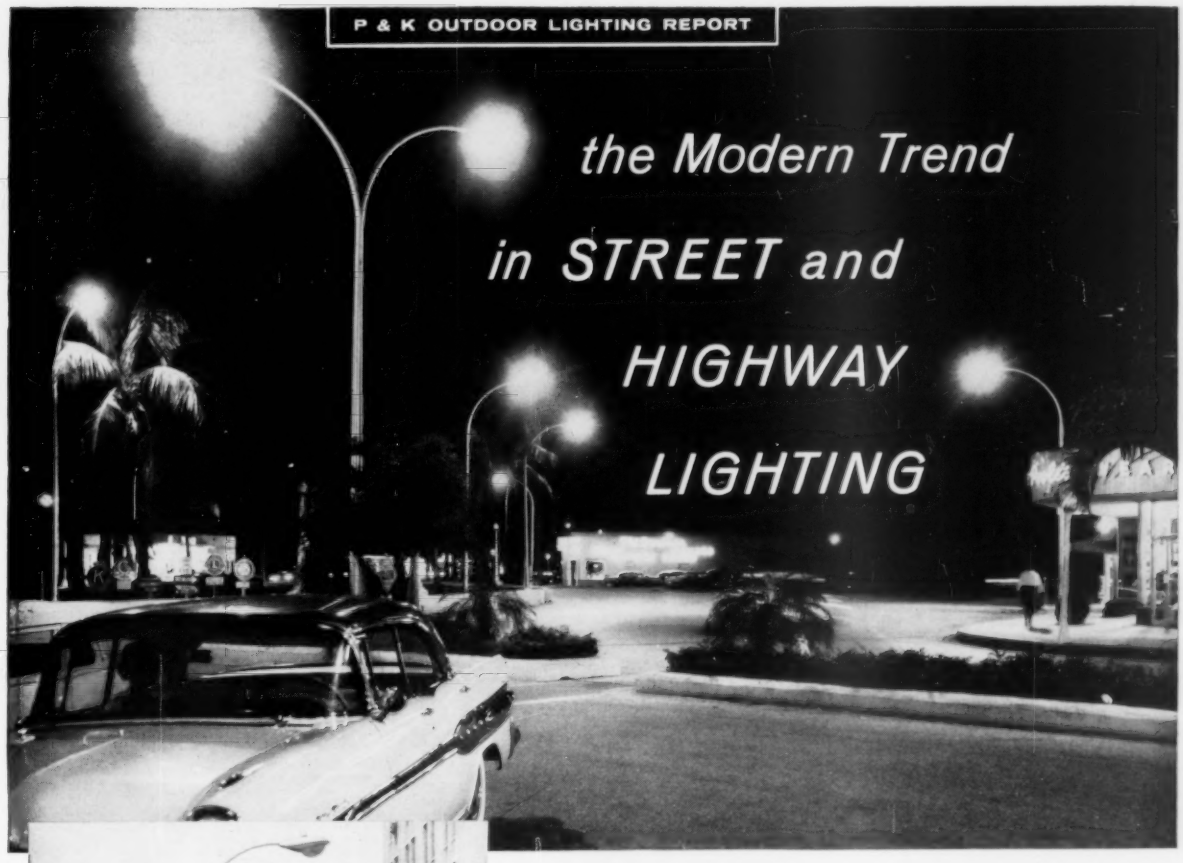
What type of distribution system shall be used? The 6.6 ampere series system is generally most popular for an overhead system, and a 120-volt multiple system, if underground distribution is used. Each system has certain inherent advantages.

What type of controls should be used? A number of variations and refinements are available on control units. However, for a series system, a constant current protective relay, primary oil switch, lightning arrester, fuse cutouts, and a photoelectric relay are generally required. Each lighting unit on a mercury

(Continued on page 137)

From an address before the 45th Annual Highway Engineering Conference, University of Illinois, February 25th, 1959; reprinted in the state municipal publications of Illinois, North Dakota and Iowa.

P & K OUTDOOR LIGHTING REPORT



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TOP PHOTO: Traffic circle illumination— West Miami Springs, Florida

LOWER PHOTO: New White Way—White Plains, New York

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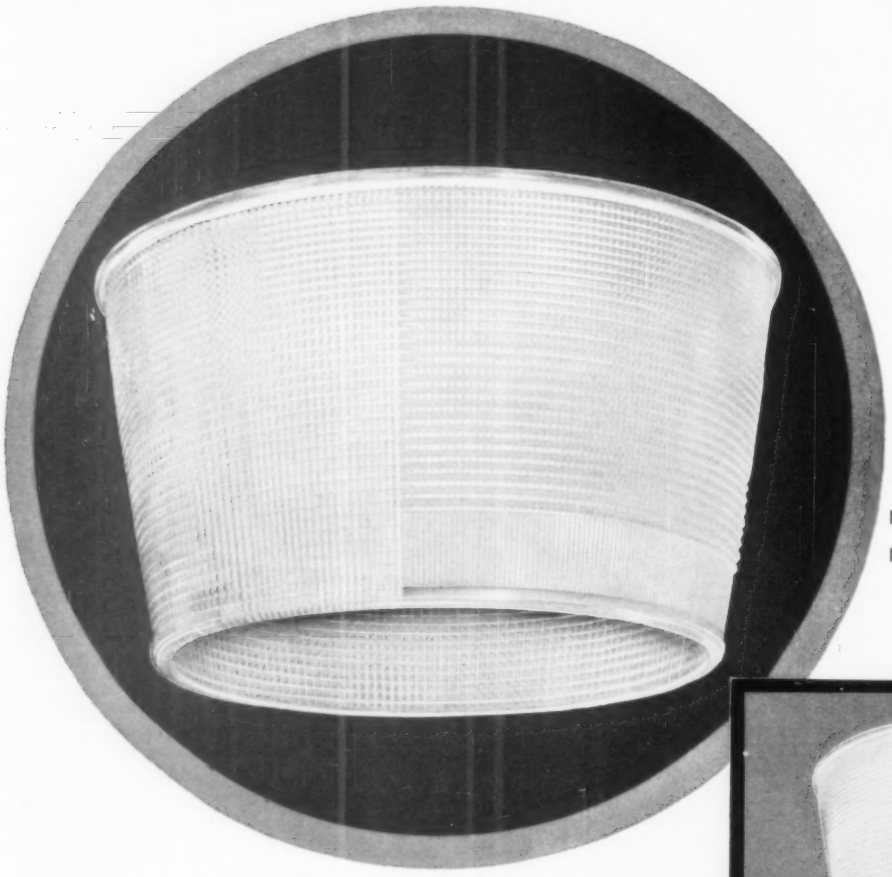

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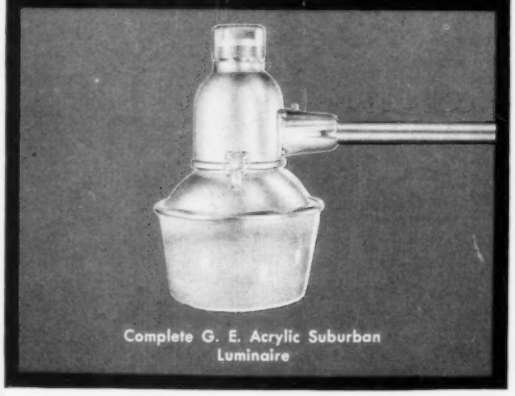

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The first PRISMALUME® series of its kind ever engineered—a new group of HOLOPHANE Open-Bottom Refractors for a wide range of street and property lighting purposes... Molded of crystal clear acrylic plastic, these refractors resist thermal shock, are unaffected by atmospheric conditions, reduce servicing costs... Moreover, their advanced prismatic constructions—with a specific distribution for each lighting situation—assure these unique advantages: • concentration of more light where it is most required; • vastly more illumination per dollar • crisp, modern appearance... Where quality and performance count—you can count on Holophane Prismatic Refractors.

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Write for Engineering Data without obligation

(Continued from page 132)

vapor or fluorescent source will include a separate insulating transformer to protect the luminaire from damage from high voltage in a series circuit.

What type of pole shall be used? Poles are available in wood, steel, concrete, and aluminum. The engineer or superintendent in charge of maintenance often influences this decision. Sometimes alternate bids are taken on more than one type to increase competition among suppliers. In addition to first cost, maintenance costs should be considered in this selection.

The items discussed above are probably the principal items which must be resolved prior to preparation of detailed construction plans. If the job is a small one, these design decisions, along with any other design decisions peculiar to the project, can probably be resolved in a conference between the engineer and the officials. If the job is extensive, a preliminary report, along with supporting cost estimates and specific recommendations, should be made.

The first step in detailed plan preparation is a field survey of the streets to be served. This survey should include the location of all obstructions between the sidewalk and the curb; location of any underground openings, vaults, or basements which might interfere with the installation; and location of driveways, cross-walks, trees, or existing poles which might interfere with location of lights. After this information is plotted, a tenative location of lighting units is established.

The tentative location of lighting units is based on desired illumination standards. A circuitry plan is then devised and location adjustments are made to satisfy circuitry conditions. A plan is then field-checked and final location revisions are made to conform to field conditions not disclosed in survey information. The plans can then be detailed, quantities determined, working specifications prepared, and advertised for construction.

JAMES P. MURPHY
Crawford, Murphy and Tilly
Consulting Engineers, Springfield, Ill.

Plastic Alarm Globes In Brooklyn And Queens

A serviceman installs a new fire globe on a street light pole in the Borough of Queens, New York City, from a 29-foot Crowsnest ladder made by Industrial Systems Co., Matawan, N. J., and mounted on a 1959 Dodge truck.

Use of butyrate plastic instead of glass fire globes in the boroughs of Brooklyn and Queens, New York City, has cut the replacement rate sharply.

Mounted on the street light poles next to fire alarm boxes, the globes mark the intersections at which the fire alarm boxes are located. On the newest street light poles, the globes are 25 feet above ground, but on many of the older types of poles, they are mounted only 14 feet high. The globes' characteristic orange hue is well-suited to their purpose but at the same time it makes them targets for accidental and malicious mischief.

Seeking to reduce breakage, Fred O. Paige, director of purchases for Welsbach Corp., which services the Brooklyn lights, decided to investigate other materials. It was found that Tenite butyrate, supplied by Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Co., could match the required orange color and give resistance to impact. The globes, manufactured by A. L. Hyde Co., Grenloch, N. J., are molded in two pieces and then welded with solvent cement. They are attached to the lighting fixtures by set screws.

In New York City, 32-watt lamps illuminate the globes, since their purpose is only to call attention to the fire alarm box.

In addition to the reduction in breakage after installations it was noted that because of the toughness of the plastic there is virtually no accidental breakage by the Welsbach maintenance crews, either while the globes are being transported to the job, while they are being installed or when the light bulbs are being changed.

What is "positive" fire alarm protection?

An outstanding example of "positive" fire alarm protection is the $112,000 Gamewell System modernization completed about a year ago in Chester, Pa. This up-to-the-minute system has greatly increased the fire department's operating efficiency and completely eliminated costly false alarms due to equipment failures. In addition, maintenance has been greatly reduced.

There are 169 fire alarm boxes including Master Boxes within three large industrial plants. Alarms are automatically transmitted to fire and police headquarters and five engine houses. Advanced design assures reliability. Even when outside wiring is "knocked out" by hurricanes, snowstorms, etc., system's "pull" boxes still transmit alarms to headquarters.

Mr. Garry Boden, Director of Public Safety (shown right above with Mr. James Gorbey, Director of Accounts and Finances), feels that Chester has one of the nation's most modern fire alarm systems. Make certain *your* community is as well protected. Ask for a Gamewell Survey. No obligation. Write The Gamewell Company, 1275 Chestnut St., Newton Upper Falls 64, Massachusetts.

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FIRST... WHEN SECONDS COUNT!

New York City's Code of Ethics For Municipal Employees

New York City now has a code of ethics, adopted last summer for the guidance of councilmen and other employees of the city. The same code has been accepted by the New York City Transit Authority. The Housing Authority and the Triborough Bridge and Tunnel Authority presently are studying the code for possible acceptance. All three are autonomous public groups. The code reads:

a. Conflicts of interest—No councilman or other officer or employee, whether paid or unpaid, shall engage in any business or transaction or shall have a financial or other private interest, direct or indirect, which is in conflict with the proper discharge of his official duties.

b. Representing private interests before city agencies—No councilman or other officer or employee whose salary is paid in whole or in part from the city treasury shall appear in behalf of private interests before any agency, including the New York City Transit Authority, the New York City Housing Authority and the Triborough Bridge and Tunnel Authority. Councilmen, however, may appear without compensation in behalf of constituents, or in the performance of public or civic obligations. This section shall not prohibit appearances upon matters only incidentally requiring official action which do not develop into a substantial part of the employment, provided, that the retainer is not for the purpose of appearing before the agency, and provided further, that the compensation, in whole or in part, is not contingent or dependent upon the action of such agency. No person serving the city without compensation shall appear, either directly or indirectly, on behalf of private interests in matters involving the agency which he serves or before any agency of the city affecting matters involving the agency in which he serves.

c. Representing private interests before courts—No councilman or other officer or employee whose salary is paid in whole or in part from the city treasury shall represent private interests in any action or proceeding against the interests of the city, in any litigation to which the city, the New York City Transit Authority, the New York City Housing Authority or the Triborough Bridge and Tunnel Authority is a party, or in any action or proceeding in the municipal term of the magistrates' court of the City of New York in which the city or any agency or any officer or employee of the city or an agency in the course of his official duties is a complainant.

d. Disclosure by councilman of interest in legislation—A councilman who has direct or indirect financial or other private interest in any proposed legislation shall publicly disclose, on the official records of the council, the nature and extent of such interest.

e. Disclosure by officer or employee of interest in legislation—An officer or employee who, whether paid or unpaid, has a direct or indirect financial or other private interest in any legislation, and who participates in discussion before or gives official opinion to the council, the board of estimate or the mayor, shall publicly disclose on the official record the nature and extent of such interest.

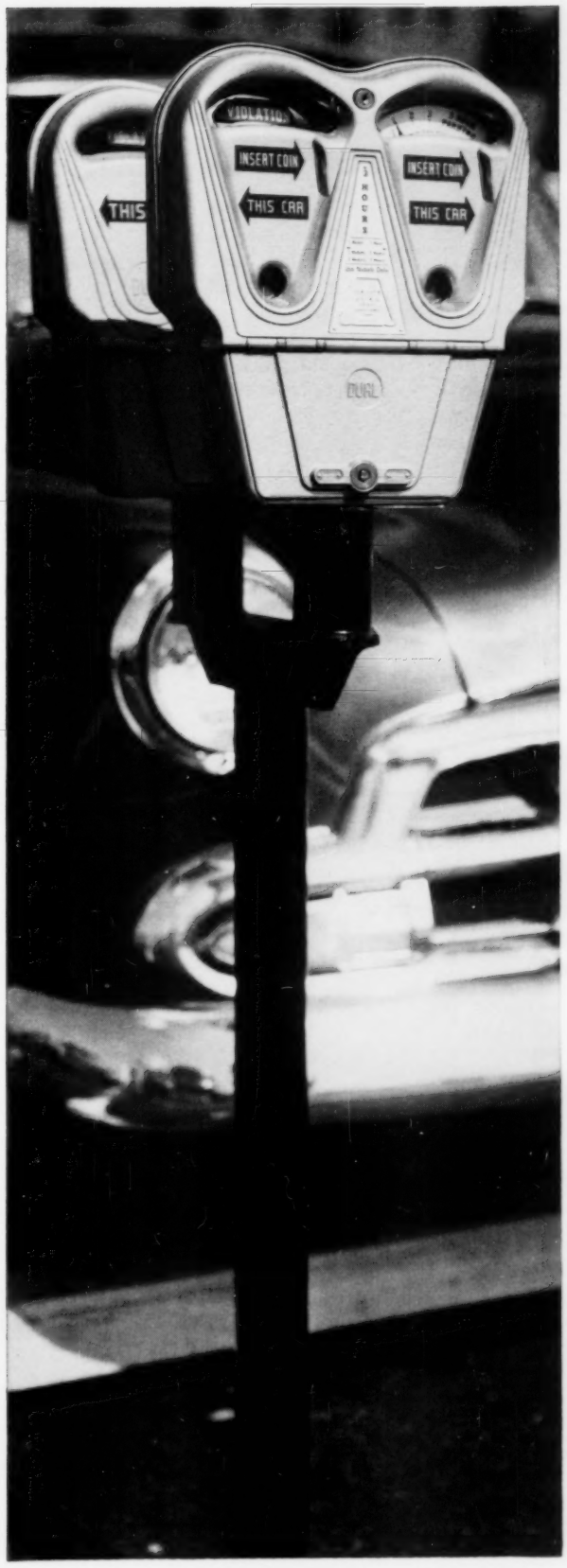
f. Gifts and favors—No councilman or other officer or employee, whether paid or unpaid, shall accept any valuable gift, whether in the form of service, loan, thing or promise, or any other form from any person, firm or corporation which to his knowledge, is interested directly or indirectly, in any manner whatsoever, in business dealings with the city.

g. Disclosure of confidential information—No councilman or other officer or employee, whether paid or unpaid, shall disclose confidential information concerning the property, government or affairs of the city. Nor shall he use such information to advance the financial or other private interest of himself or others.

h. Investments in conflict with official duties—No councilman or other officer or employee, whether paid or unpaid, shall invest, or hold any investment directly or indirectly in any financial, business, commercial or other private transaction, which creates a conflict with his official duties.

i. Incompatible employment – No councilman or other officer or employee, whether paid or unpaid, shall engage in or accept private employment or render services for private interests when such employment or service is incompatible with the proper discharge of his official duties.

j. Future employment—No council-



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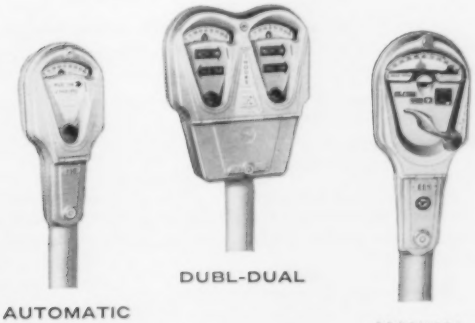
Dual, with 25 years of know-how, can also give you expert advice and assistance on street-marking, to accommodate more cars . . . on-street or off-street. For information on Rockwell's complete line of automatic and manual parking meters, write: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa.



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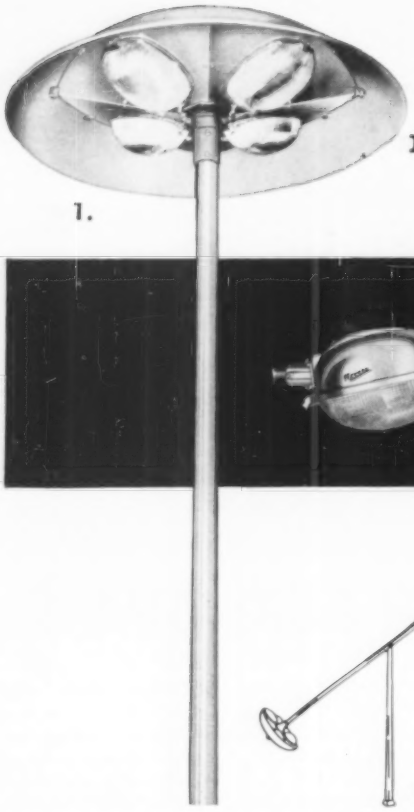

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2. **Endoval luminaires** *are used to light shopping-center parking lots, automobile sales lots, store fronts and similar applications where high intensity, glare-free light is desired. Uses 250 or 400-watt mercury lamps.*

3. **Revere hinged poles** *make for safe, economical lamp maintenance at ground level. Eliminates need for boom trucks or ladders.*

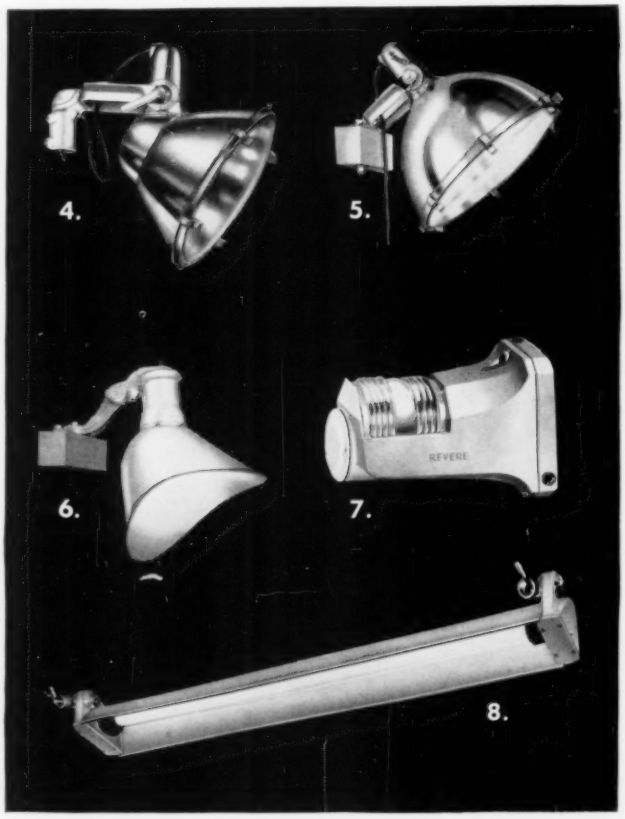
4. **4200 Series** *floodlights provide efficient large-area lighting for sporting fields, storage yards, buildings, etc., using 750, 1000, or 1500-watt incandescent lamps with wide or narrow-beam reflector.*

5. **7400 Series** *floodlights use 1000-watt mercury lamps to provide exceptionally high light output for railroad yards, sports fields, parking lots and other large-area applications.*

6. **3800 Series** *Eliptor floodlights are an economical source of high intensity lighting for smaller area, general-purpose applications. Eliptor floodlights are available for 300- to 1500-watt incandescent lamps.*

7. **3151 Series** *underneath floodlight provides unusually attractive lighting effects for buildings or other vertical surfaces.*

8. **Fluoresign** *outdoor luminaire is highly efficient, economical way to illuminate poster panels, store fronts, highway signs, painted walls and other surfaces, using HO, VHO, SHO or Power Groove lamps.*



man or other officer or employee whether paid or unpaid, shall solicit, negotiate for, or promise to accept employment, by any person, firm or corporation with which he or his agency is engaged on behalf of the city in the transaction of business or which is or may be affected by his official action.

Any violation of any of the provisions of this section shall constitute cause for fine, suspension or removal from office or employment.

An amendment to the code prohibits the appearance of a city officer or employee before a city agency for two years after the termination of his service.

To guide in the enforcement of the code, the city has established a Board of Ethics to render advisory opinions on individual cases. The board consists of the corporation counsel, the director of personnel, and three private citizens, residents of the city who are appointed by the mayor.

Kansas City Annexes

Kansas City, Mo., annexed 145 square miles in a recent election, more than doubling its total area, and eliminating, at least temporarily, the possibility of encirclement by independent suburban communities.

The annexations were advanced by Councilman Thomas J. Gavin and Mayor H. Roe Bartle and supported by various civic organizations. It is the third annexation since 1909. An additional 47-square-mile area will be submitted to the voters next August.

Urban Renewal Returns $5 for Every Dollar Spent

The nation's businessmen must "take their heads out of the sand" and work actively in redeveloping American cities. This was the blunt advice of Albert M. Cole, executive vice president of Reynolds Aluminum Service Corporation, Richmond, Va., to the Miami, Fla., Producers Council.

Mr. Cole said every federal dollar spent on lifting the face of a city generates five more local dollars in business activity. A city cleaning up its slums can anticipate that its tax revenues from the redeveloped area will increase 2½ to 10 times.

Mr. Cole is the former administrator of the federal housing and home finance programs.

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Actually, in the past 45 years, Lyle representatives have worked with hundreds of different sign problems—perhaps, the very one that confronts you now. Proper sign materials, applicable national and state sign standards . . . these and the many other considerations so vital to the field of traffic control.

And, of course, a conference with a Lyle Field Representative puts you under no obligation.

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Four City Engineering Projects Draw Praise in ASCE Competition

In the competition, won by the St. Lawrence Seaway project for the most outstanding civil engineering project of the year, four municipal projects won high consideration. These projects were:

- **The Allegheny County Sewerage System.**
- **Philadelphia's Torresdale Water Purification Plant.**
- **The Wichita, Kan., flood-control project.**
- **The New Haven, Conn., Oak Street Connector.**

The competition is the first sponsored by the American Society of Civil Engineers for the year's outstanding civil engineering achievement. To be eligible a project must demonstrate great engineering skill and contribute to engineering progress and to mankind.

The Allegheny County Sewerage System won special consideration for its unusual system of concentrating the raw sludge and incinerating it, thereby adding to the design principles of the engineering profession. The project also contributed to engineering knowledge through its pioneering design of deep tunnels for sewer conduits, and its resourceful method of operating pumps to avoid high-lift heads. The jury also noted its substantial contribution to mankind by serving the sanitation needs of the area's great industrial activity, and also the 1,400,000 residents of the Pittsburgh area. The plant was designed by Metcalf and Eddy, Boston consulting engineers, under the direction of John Laboon, chief engineer of the Authority.

Philadelphia's Torresdale water purification plant drew special attention of the judges through its thorough development of automatic controls. The plant was designed by Morris Knowles, Inc., Pittsburgh, with the assistance of the Philadelphia Water Department.

The Wichita flood-control project involved 40 miles of river channel, 93 miles of levees, and over 6,000 acres of land. It was designed and built by the U. S. Army Corps of Engineers.

The New Haven Oak Street Connector is a 5,800-foot-long overpass which includes five grade-separation structures and a bridge. It showed unusual engineering resourcefulness in the design of the structure itself and the management of construction to avoid disrupting rail traffic on the main-line track of the New York, New Haven, and Hartford Railroad. The connector is part of New Haven's redevelopment program that has attracted nationwide attention. The bridge designed by Steinman, Boynton, Gronquist & London, New York, uses three continuous box-girder spans, two of 151½ feet, and one, 379 feet.

The St. Lawrence Project, winner of the competition, was given the award on the basis of its tremendous contribution to mankind, opening the Great Lakes to 80% of the world's shipping and providing 1,880,000 kw of power development.

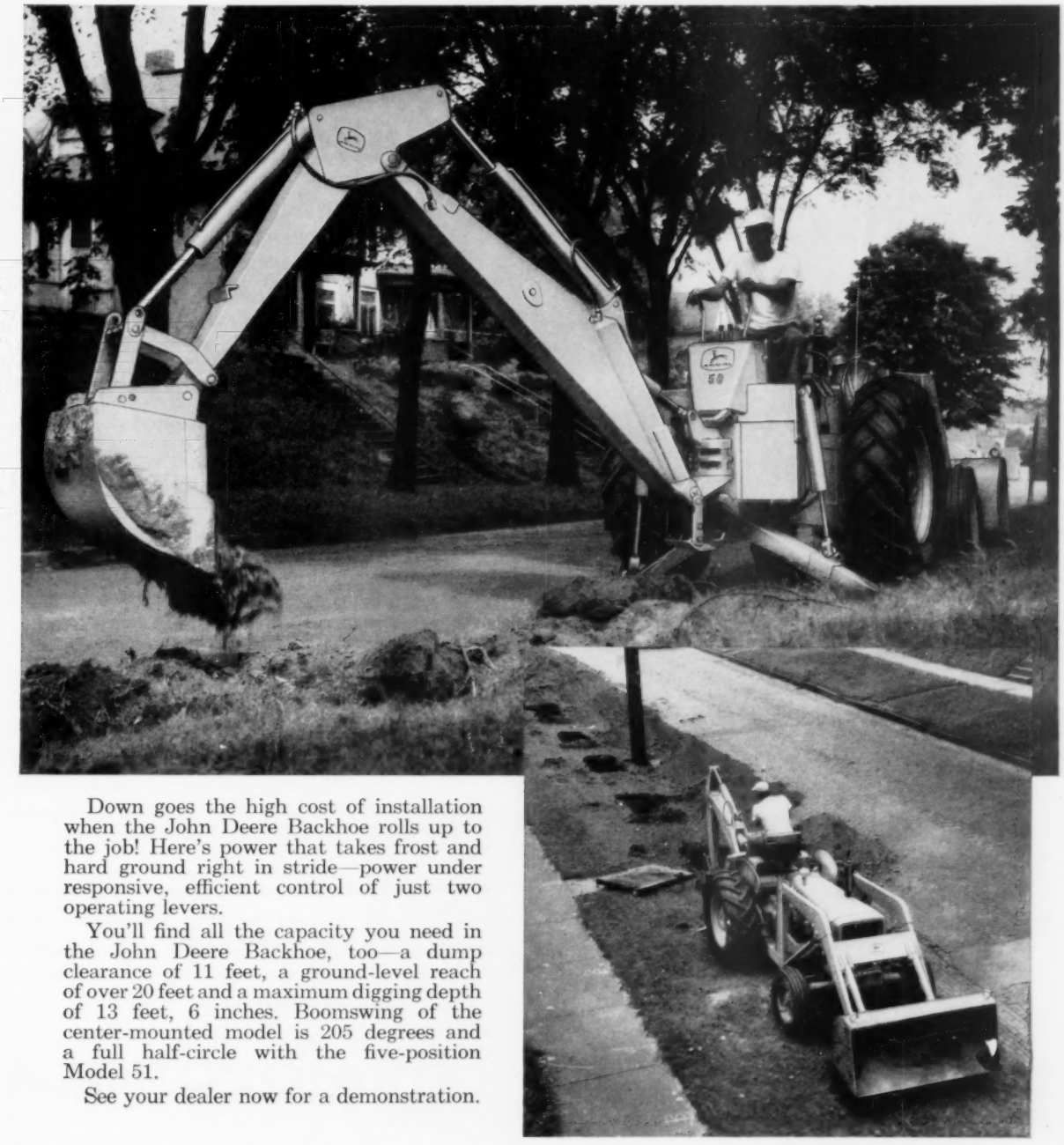
Other civil engineering projects considered were: the Wilson Lock in the TVA system, the world's highest single-lift lock; Scioto Downs grandstand, Columbus, Ohio, with the world's largest inverted umbrella concrete roof; the Executive House, a 9-story reinforced concrete apartment house in Chicago, the tallest reinforced concrete structure of its kind in the United States; the Oahe Dam, on the Missouri River upstream from Pierre, S. D., believed to be the world's largest earth dam; the launching facilities of the Atlas and Thor missiles and their supporting structures at Vandenberg Air Force Base; the Glen Canyon Bridge, spanning a 1,200-foot-wide, 700-foot-deep gorge in the Colorado River, and the Priest Rapids Dam in Washington.

The panel of judges for the competition included eight editors of magazines reporting activities relating to civil engineering. These included: *Civil Engineering*, Hal Hunt, jury chairman; *Construction Methods*, Henry Perez; *Contractors and Engineers*, William Quirk; *Engineering News-Record*, Waldo G. Bowman; *Public Works*, W. A. Hardenbergh; *Roads and Streets*, Harold J. McKeever; *Western Construction*, J. I. Ballard; THE AMERICAN CITY, William S. Foster.

Members of the International Municipal Signal Association who attended the 1959 convention are contemplating with some dismay their 1960 locus—New York City. It's a matter of expense. New York just doesn't have the facilities for breaking even or making a profit that Las Vegas did.

CUT TRENCHING COSTS with John Deere

2-fisted power under 2-lever control



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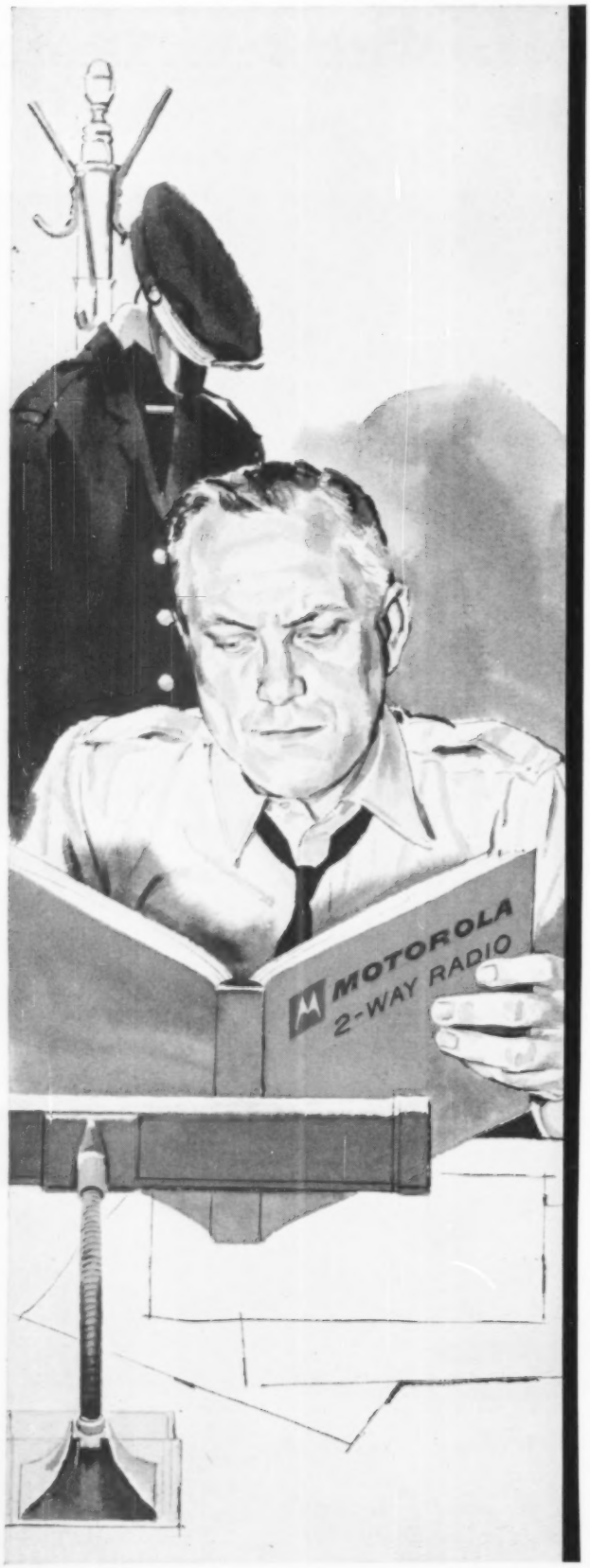

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is working late again tonight!

As a purchaser of equipment on which *lives* may depend, you naturally spend a lot of time *comparing* before you specify. So, when it comes to equipment as intricate as 2-way radio, you've got a real job on your hands.

That's why Motorola has a Factory Sales Engineer nearby. He's there to help you plan a system that's custom-tailored to your needs. He can do this job best—because he can plan from the largest selection of equipment available anywhere. And he's backed by an army of electronic specialists—from engineering through production to factory supervised service stations.

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The City Tells Its Story

Edited by PAN DODD EIMON

Municipal Public Relations

Town Finds Fame, Beauty, New Spirit In Flower Box Program

Neosho, Mo., believes it has found out how to sustain a successful city beautification program that is more than skin-deep. The secret: "Interest the men—as well as the women."

That Neosho men are deeply involved in the community beautification (which won the city an "All-America" Award in 1957 and has brought the little town national prominence and increasing economic independence) is evident everywhere. At City Hall, Mayor Pat O'Reilly and City Manager Andy O'Rourke are enthusiastic over first-year results from use of a new city-developed compost. In Chamber of Commerce offices, Manager Allen Robinson is busy with plans for distributing trees for 1960 spring planting. More than 200 pink and white dogwoods will go to flower box winners and others are being given to Neosho schools for Arbor Day observances.

On the main streets around the square, businessmen are hanging flower boxes from street light standards. In front of local shops and businesses, evergreens—which brighten the downtown boxes in winter months—are being replaced by early-blooming bulbs and flowers.

At local plants, like that of Kraft Foods, the administration is as concerned over the general appearance of the building and abutting streets and sidewalks as over the seedlings being put into the flower boxes, permanently installed at every street-level window.

Several years ago, when Neosho needed a shot in the arm, it was the ladies who wanted to spring-clean the town and make it more attractive. A flower box program was decided on for the initial effort because boxes are relatively easy to care for in dry weather. Before the beautification scheme got up full steam, city officials had the satisfaction of seeing every community group in town—the Chamber of Commerce, JayCees, Rotary, Lions, Kiwanis, Business and Professional Women, Garden Club, American Legion, VFW, Masonic Lodge, Odd Fellows—and local businesses actively engaged in the program.

One of 3,000 flower boxes in Neosho, Mo., is this one being hung from a downtown street light by local businessmen.

Neosho city officials believe that theirs is the only American city whose trash cans feature blooming flowers. The flower-box program has encouraged cleanliness, sparked remodeling and fixing up of Neosho business houses, plants and homes.

The Pet Milk Co., for instance, distributed, free-of-charge, 400 cut-down barrels as flower boxes. Lumber yards offered building materials for flower boxes at cost.

Men of the community, working at night, built several hundred boxes. The town of Neosho furnished trucks to get good loam and soil and stockpiled this in an easily accessible spot.

Service station operators painted oil drums with "Litter—Keep Neosho Clean." Local nurseries supplied plants at special low prices.

Money was raised locally to supplement a cash grant ($12,000 over a period of several years) made to the city, as a non-profit organization, by the New York Community Trust. Funds were used for cash prizes ranging from $10 to $100 that first year.

Nearly 900 individual homeowners and businesses entered the first-year contest. Mayor O'Reilly says the first competition "ignited a spark that has fired community enthusiasm, not only for beautifying our city, but for other local undertakings."

This year, Neosho's Public Works Department will distribute, without charge, the compost developed by its director, Charles North. Walnut hulls, chicken manure, lime, and fertilizer are the main ingredients. Citizens, who want the compost, set out containers and a white flag. Public Work's trucks make the deliveries.

Other elements of the 1960 pro-

gram include a planting project at the high school grounds, to be carried out entirely by students. An estimated 3,000 flower boxes — at every business house on the square, schools, churches, industries, and most homes—will be in bloom.

The local hospital is believed to be the only one in the country which will have a well-kept flower box at the window of every patient's room. And the U. S. Post Office, after getting permission from Washington to do so, will, again this year, have blooms at each window.

As mentioned earlier, flower boxes will hang from street-light standards, downtown. Filling stations, garages, and restaurants on Highways 60 and 71 will have flower plots or boxes on their property.

Growers in Neosho have found that, in their climate, geraniums, petunias, verbena, caladium, and coleus are most successful. Tulips and jonquils do well in spring boxes. Begonia, periwinkle, marigold, salvia, and morning glory grow well in boxes in Neosho. For fall, flowers are replaced by plants like nandina, boxwood, arbor vitae, euonymus which stay green till spring.

While prize money was a strong incentive at first, Mayor O'Reilly says that the spirit the program has created, makes prize money unnecessary now. First, second, and third prize-winners receive dignified masonite plaques which they may display until the next contest. These, the prizes of dogwood trees, and the desire to make Neosho a better-looking community is sufficient incentive to the 1960 gardener-citizens.

Neosho's flower box program has been featured in *Look*, *Life*, *Reader's Digest*, *Ford Times*, *Friends* (the Chevrolet magazine), and in *Flower and Garden*. To meet the flood of requests for information about the program and about Neosho, six sets of colored slides have been developed. These are booked three months in advance and will be seen throughout the United States this year.

The city has also published a small brochure on the flower box program. It points to the *real* harvest of flower box planting: new attention and interest in town planning and zoning, better schools, and "all the things that make a good community."

EDITOR'S NOTE: For the slides, the brochure, or further information, contact the Mayor, City Hall, Neosho, Mo., or the Manager, Chamber of Commerce. Photo credits: Charles Allonby, Neosho Chamber of Commerce.

Director of Public Works Charles North, 1960 Flower Box Chairman Lester Firestone, City Manager Andy O'Rourke and Mayor Pat O'Reilly check sheds filled with compost.

The city developed the compost and will distribute it free to flower box gardeners such as these ladies who are bringing their home and planters up to the mark.

Kraft offices have blooming flowers in boxes.

Evergreens grace Neosho flower boxes in winter.

Cataphote crew lays long-lasting Catatherm on Eden's Expressway—Chicago.

Cleanly extruded Catatherm hits and bonds to pavement at approximately 400° F. Stripe is traffic-ready 3 to 6 minutes later.

Catatherm Reflective Thermoplastic Striping goes down easy . . . stays down longer

This is Eden's Expressway on Chicago's North Side . . . one of the world's busiest thoroughfares. Pavement markings of ordinary traffic paint have little chance of survival here.

To solve the problem of "short life" markings, the Illinois State Highway Department turned to Catatherm . . . Cataphote's reflective thermoplastic striping material. Composed of specially formulated thermoplastic resins, pigment and over 40% reflective traffic beads, Catatherm is hot extruded directly and securely onto any pavement . . . is available in white and yellow. Cataphote waterproof drop-on traffic beads, applied simultaneously with the extruding operation, provide immediate all-weather reflectance . . . add longer life to the stripe.

Catatherm can mean a brighter safety picture for *you* in the actual striping operation. Striping equipment at work creates a traffic hazard . . . the possibility of accident is always present. Drastically reduce restriping and this danger is virtually eliminated. You can do this with Catatherm . . . it outlasts good quality paint stripes from 9 to 26 times . . . saves plenty of maintenance dollars, too.

Pace setters in traffic control have recognized the advantages of Catatherm. Now, they "STRIPE IT . . . AND FORGET IT." Like to be a leader, too? Let us tell you more about Catatherm. Write for Catalog C-160.

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water

comes in oceans, rivers, lakes, wells,
drops, buckets, pitchers and glasses.
it quenches thirsts, cooks food, puts
out fires, makes coffee and
brushes teeth. it spins mills,
runs electro-plants, cools motors
and power factories.
it spawns fish, sprinkles lawns,
floats boats, washes children
and grows flowers.

it sustains and nurtures.
it bends if you give it purpose.
it reshapes itself if you give it reason.
it is needed, wanted, feared,
praised and prayed for.

it is at the heart of all life.
it is in the arteries of all industry.
it is as close to us as skin
but as taken for granted as sky.

the end of water seems unbelievable.
if it is not on the horizon, it is just over it.
if it is not within sight,
it is just 'round the bend.
if it is not in the glass,
it is just in the spigot.

. . . this is the grand mirage . . .
the self-delusion that prevails
though the wells run low
and the streams go dry
and the water slips away.

we know water.
we know its ways.
we've learned its habits.
we've pulled it out of swamplands,
pushed it over mountains,
pumped it into deserts,
tunneled it through granite,
and rescued it from pollution.

above all else,
we know the need for it.
that is why,
for 130 years,
we've developed new uses for,
powered new factories with,
diverted the courses of
and jealously stood guard over
water.

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Whatever your pumping needs . . . whether your problem is flood control, irrigation, water systems, dams or reservoirs . . . whatever your concern with water may be . . . we can help you.

Our pumps . . . our generators and controls . . . our new rotary compressors . . . our drive toward better ways to de-salt ocean water . . . the potential of our advance Research & Development Center in Beloit . . . our lead position in the field of Hydrodynamics . . . all of these equip us to serve you.

Send for our brochure—"Hydrodynamics." Please write to Mr. Robert W. Kerr, President, Fairbanks, Morse & Company, 600 South Michigan Ave., Chicago 5, Illinois.

Highland Park, Ill., learns how to build . . .

Melt Resistant Ice Rinks

. . . on asphalt play areas

By DAVID H. FRITZ
Superintendent of Parks

Ice skating has always been an enjoyable pastime for those of us with cold enough climates and available ponds. However, where artificial ice facilities are required, it often becomes expensive and complicated. We who have to build and maintain artificial ice rinks (not to be confused with refrigerated rinks) have, for the most part, used turf areas but, in some instances, have used asphalt playgrounds and tennis court areas. The level black-top surface enables one to obtain an excellent skating surface in one flooding.

Such areas have the advantages of quick freezing and levelness; they also present the problem of quick melting occasioned by the dark surface when it is exposed to direct sunlight.

This year we were again faced with this problem on a newly resurfaced tennis court area. After repeated unsuccessful attempts to make ice on this area, we began a concentrated effort to change the surface color by the application of whitewash.

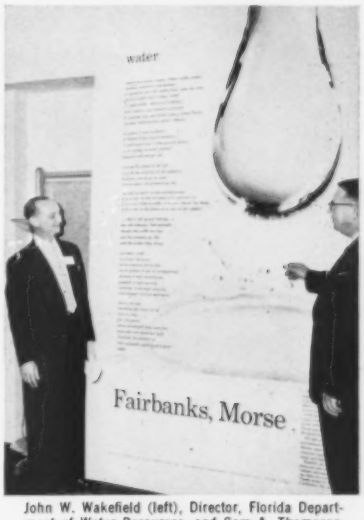
The most important problem was whether it could be applied effectively and economically. We tried various methods without much success. Hand brushing required too much labor. Back-pack sprayers worked only with a solution too dilute to be effective. Flushing the slurry on from truck-mounted 55-gallon drums used too much lime.

At this point we were about to give up, when the thought occurred to spread the lime dry. We took our 36-inch Scott fertilizer spreader and applied the lime in two directions over the entire half-acre area, using a total of 450 pounds of dry lime. The area that we covered is roughly the size of three tennis courts.

The lime had a tendency to melt into the ice layer that first had been applied over the black top. A fine spray was then applied over the entire area, sealing the lime into the surface. Also any places that were still dark were then covered with a second lime layer and sealed into the surface. This point is very important, since if any black spots, even a foot in diameter are left, the first sunny day will melt these places down to the pavement, leaving skating hazards. Also, these spots melt from the bottom up; the water from them undermines adjoining ice and carries away the lime in these areas which gradually increases the size of the poor spot until it undermines the entire surface.

The half-acre court area, took a little over one hour to cover with one lime application. We had to renew half of the court after a week of temperatures rising as high as 40°F, since during these times the surface melted from the top of the ice down and the uphill half of the court's lime application was carried off with the melting surface water. The lime application was renewed on this half in just a few hours after cold weather occurred and the pond was back in full operation the following day.

Dry lime applied to the asphalt surface proves to be the most effective and economical way to keep ice serviceable for skating.



John W. Wakefield (left), Director, Florida Department of Water Resources, and Sam A. Thompson, Chairman, Mississippi Board of Water Commissioners, view a huge enlargement of a Fairbanks, Morse water ad displayed at recent Interstate Conference in Chicago.

Wherever water experts meet Fairbanks, Morse is there

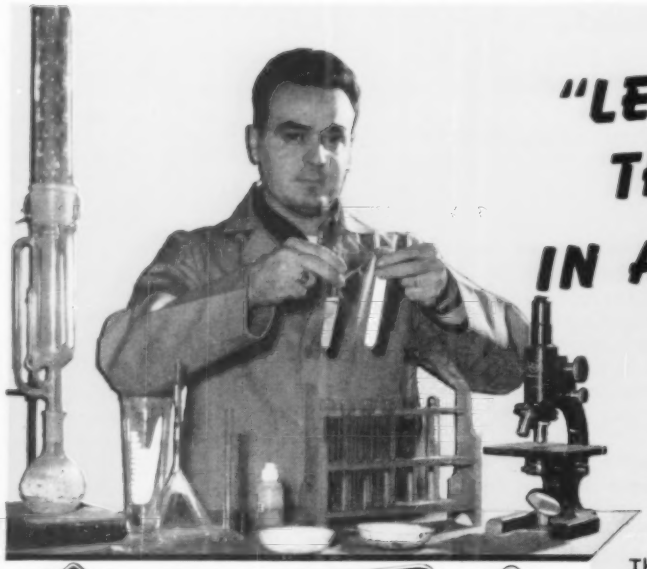
JUST as at the recent Interstate Conference on Water Problems . . . when water authorities get together, Fairbanks, Morse is a name known to all.

This is only natural, since no other manufacturer builds pumps for so great a variety of municipal hydraulic applications—from 200 gph to 800,000 gpm, and to 3000 psi. *Matched* F-M power units help assure lowest-per-gallon costs.

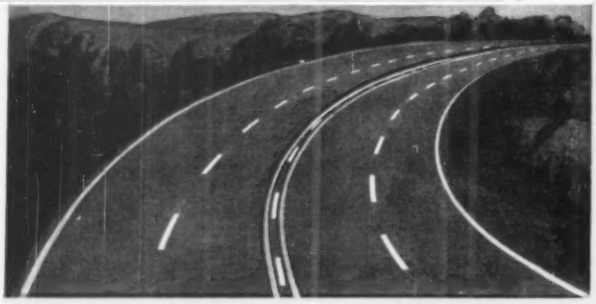
Confidence based on long buying experience explains why more local governments call for Fairbanks, Morse pumps than any other kind . . . why F-M pumps are still, today, the "standard for comparison" wherever water experts meet!

Fairbanks, Morse
Pump and Hydraulic Division
Kansas City, Kansas

A MAJOR INDUSTRIAL COMPONENT OF FAIRBANKS WHITNEY CORPORATION, NEW YORK



"LET ME SHOW YOU THE DIFFERENCE IN A TRULY WHITE, LEAD-FREE REFLECTIVE BEAD"



There is a marked difference in reflective bead quality, determined largely by degree of whiteness and lead-free quality. On these two important factors depends the brilliance, reflectivity and ultimate performance of the product. To meet Flex-O-Lite's rigid quality standards, only the *whitest white, lead-free* beads can pass inspection. Add to this, technological advances, long experience and manufacturing know-how and you have the reasons why highway signs and markers, reflectorized with Flex-O-Lite beads, literally leap out of the darkness to contribute greater safety for the motoring public . . . greater satisfaction and economy for you. Write for new brochure today.

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1. No. 831 LEAD-FREE High Index of Refraction Beads and Sign Kits. Best for white and yellow signs.

2. UB 68 LEAD-FREE Medium Index of Refraction Beads and Sign Kits. For application to signs in the darker pigment colors—greens, reds, blues, etc.

3. TYPE H SAFETY SPHERES—For danger points such as guard rails, curbs, bridge abutments, medians, hydrants and other hazardous areas where ultra-high brilliance is required. Many times brighter than paint or ordinary reflectorization.

4. TRAFFIC BEADS—Free Flowing, Moisture-Proof and Standard Beads. Tops in eye-catching brilliance and dependable reflectorization on highway center lines and edge line markings.

5. ALL-WEATHER AIRPORT RUNWAY BEADS—500 to 1,000% brighter than standard beads at angles of descent ranging from 10 to 30%.

6. FLEX-O-LITE ALSO MAKES: New Positive Free-Flowing Traffic and Sign Bead Dispensers. The economical answer to the problem of reflective glass bead application. Details on request.

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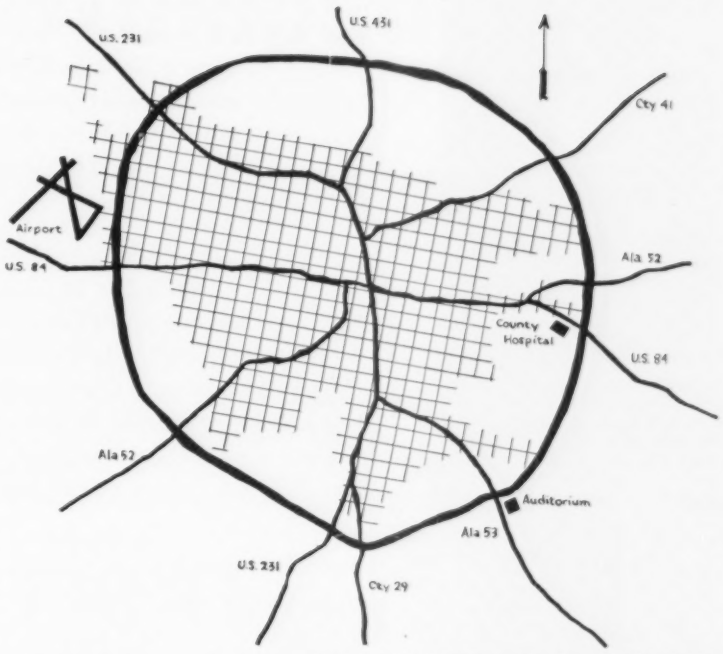
MAKERS OF DROP-ON, FREE-FLOWING, STANDARD, MILITARY, MOISTURE-PROOF, HIGH INDEX AND SIGN BEADS

Traffic Circle Around a Small City

It completely surrounds Dothan, Ala., diverts at least 30% of traffic from downtown, revises the city's probable growth pattern, improves all land values



Dothan Circle surrounds the thickly settled area, represented by crosshatching.

In 1956 the citizens of Dothan, Ala., population 30,000, asked the Alabama Highway Department for a by-pass to the west. By 1958 they were enclosed in a complete traffic circle! It happened so fast that results have not yet been accurately assessed. Dothan's growth is expected to be hastened and made easier by the Ross Clark Circle, completed and dedicated on July 30, 1958.

The Circle is fourteen miles in circumference. It cost $6 million in state and federal money. The whole length is dual two-lane ribbons separated by a grassed medial strip. All ten junctions are controlled by radar actuated signals. Six junctions have automatic left turn detectors on at least one turn, while U. S. 231 N junction has three detectors.

All but one short arc of the circle passes through farmland, a wider swing being prevented by location of the airport. Residential areas touch but do not cross the circle in five other places. Clearing the right of way involved moving or demolishing less than a dozen major buildings.

It Diverted 25%

In late November of 1958, after four months' operation of the completed circle, traffic counts were taken simultaneously at nine different points. All were between intersections. The average weekday, 24-hour count was 1,806 per counting point. The high count was 1,984; the low was 1,584.

This traffic count was taken on a weekday, before the tourist rush swelled southward traffic through or around Dothan. In the 24-hour period 13,954 vehicles approached Dothan from all directions. Only 11,897 entered the city. So at least 2,057 or 14.8% bypassed the city completely.

Moreover, 1,913 vehicles or 13.7% used the Dothan Circle to enter the city by a different route from their approach routes. It is assumed most of them were avoiding downtown traffic. Therefore at least one-fourth of the traffic approaching Dothan is being diverted from the narrow downtown streets.

This is a minimum figure. Until another destination census is made, there is no way to determine how many trips by people from within the city are made via the Circle instead of across town. The number of such trips is known to be high.

The probable total diversion of traffic from downtown Dothan must run between 30% and 40%.

Downtown merchants report customers are coming from farther out than in pre-Circle days. Glenn E. Taylor, executive vice-president of the Dothan Chamber of Commerce, estimates the city's effective marketing area has increased at least 25 miles in radius.

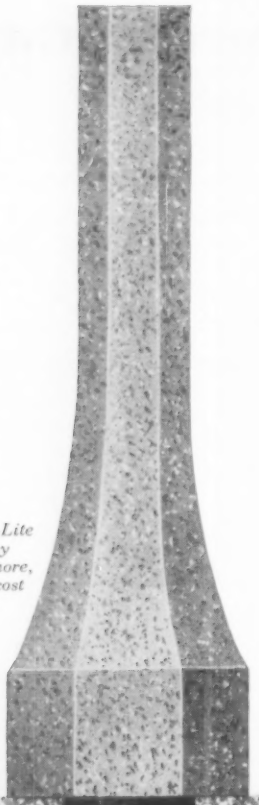
This change is most dramatic toward the north. Here the larger cities of Montgomery, Ala., and Columbus, Ga., made a large dent in Dothan's marketing area. This dent grew deeper as highways improved and Dothan's downtown congestion became worse.

While news spread of improved traffic in Dothan, many of its merchants pressed the advantage with intensified sales promotions. The hard edge of the Montgomery-Columbus dent rapidly dissolved. Once more the overlapping marketing areas became a no-man's land, with Dothan getting its fair share of the business.

Dothan's Circle has also increased the city's serviceability as the county seat. The airport and county hospital are very close to the Circle.

Property values along the Circle have zoomed. Acreage formerly well off the highway rose from $100 an acre to as much as $1,000 an acre now that it bordered the Circle. At the same time downtown property values have also stiffened on the strength of improved accessibility.

Even so, new business has been cautious about setting up on the



Although Hy-Lite standards may cost a little more, the installed cost is much less.

• Is street lighting in your planning? If so, you will want to consider *all* costs, not just the price of the lighting standard itself.

With Hy-Lite Stress-Spun standards, the money difference is easily proved by the lower cost of installation, plus the added savings of maintenance-free service.

The precast butt foundation design of Hy-Lite standards eliminates all need for expensive, time-consuming "cast in the field" foundationing. Just drill, set, tamp and Hy-Lites are completely installed, ready for wiring.

Add up *all* the money and maintenance saving advantages and we believe you will want to know more about attractive Hy-Lite lighting standards. Write the American Concrete Corporation, 5092 North Kimberly Avenue, Chicago 30, Illinois.

IT'S THE "IN GROUND" COST THAT'S REALLY IMPORTANT

American Concrete

STRESS-SPUN CONCRETE LIGHTING STANDARDS

Circle. People have been afraid one side might prove much more popular than the other. The balanced traffic count has reassured them. Movement to the Circle has started, led by firms catering to transients.

Who got hurt by the Circle? Foremost were many service stations that depended on transients. Complaints were violent also from motels and restaurants located within the Circle. However, "two large midtown motels have opened in Dothan *since* the Circle was completed, and are full most of the time," reports City Manager R. Powell Black.

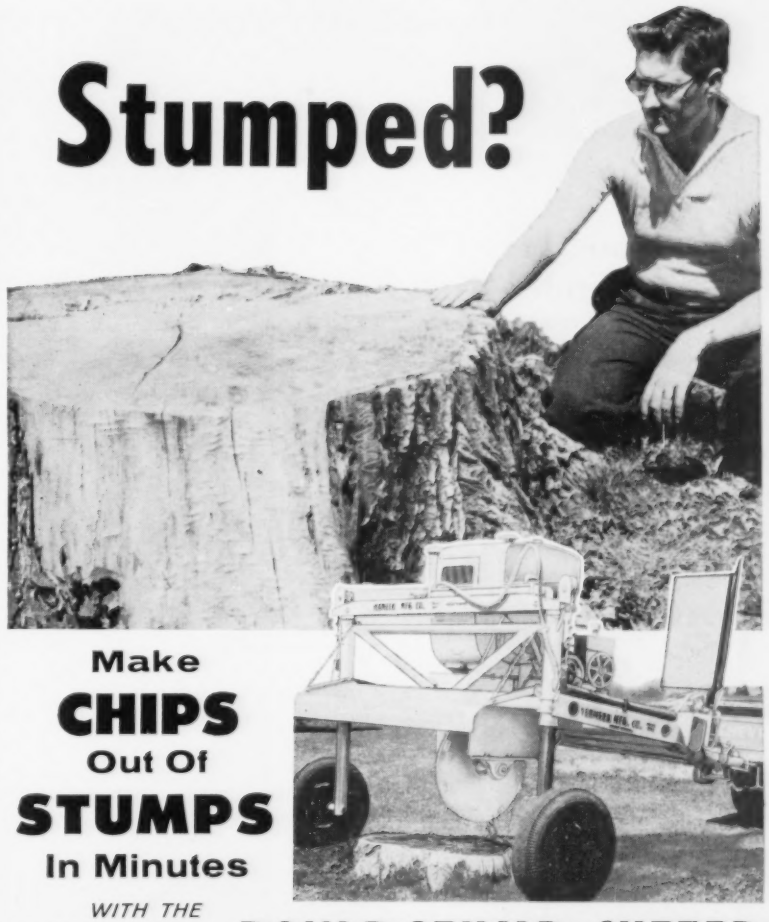
The erection of a large new restaurant at the Circle junction with U. S. 231 N has affected downtown restaurant business. However, it is probable that a new restaurant of that caliber would have had the same impact in the same location without benefit of the Circle.

Wooing new industry has become easier with addition of data on Dothan Circle to the invitation portfolio. Over the past decade Dothan has welcomed one new small industry to its midst each successive year. This resulted from a concerted deliberate effort to attract small businesses to Dothan. They are preferred to a single large concern that could shake the city's economy with its own internal conflicts.

Measures Against Juvenile Delinquency

The Police Department of Three Rivers, Mich., is proud of its work with juvenile delinquents. In its last annual report the department reveals that in 1959 a total of 160 juveniles were arrested, less than 5% of the estimated 2,748 young persons under the age of 17 years residing in the city. Interviews were held with each offender and his parents. More than 100 interviews were held with juveniles at their request. A closer relationship between police, church, community and school exists through the appointment of a department chaplain, Father Robert Gerhard, and the organization of the Family Service Center. The juvenile problem confronts all law enforcement officials in practically every city, village and county in the nation. It is only by having every citizen, police officer, church, school, teacher, priest and minister working together that we can hope to solve the problem that exists today.

Stumped?



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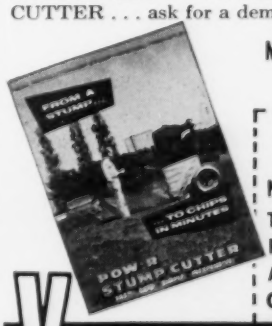

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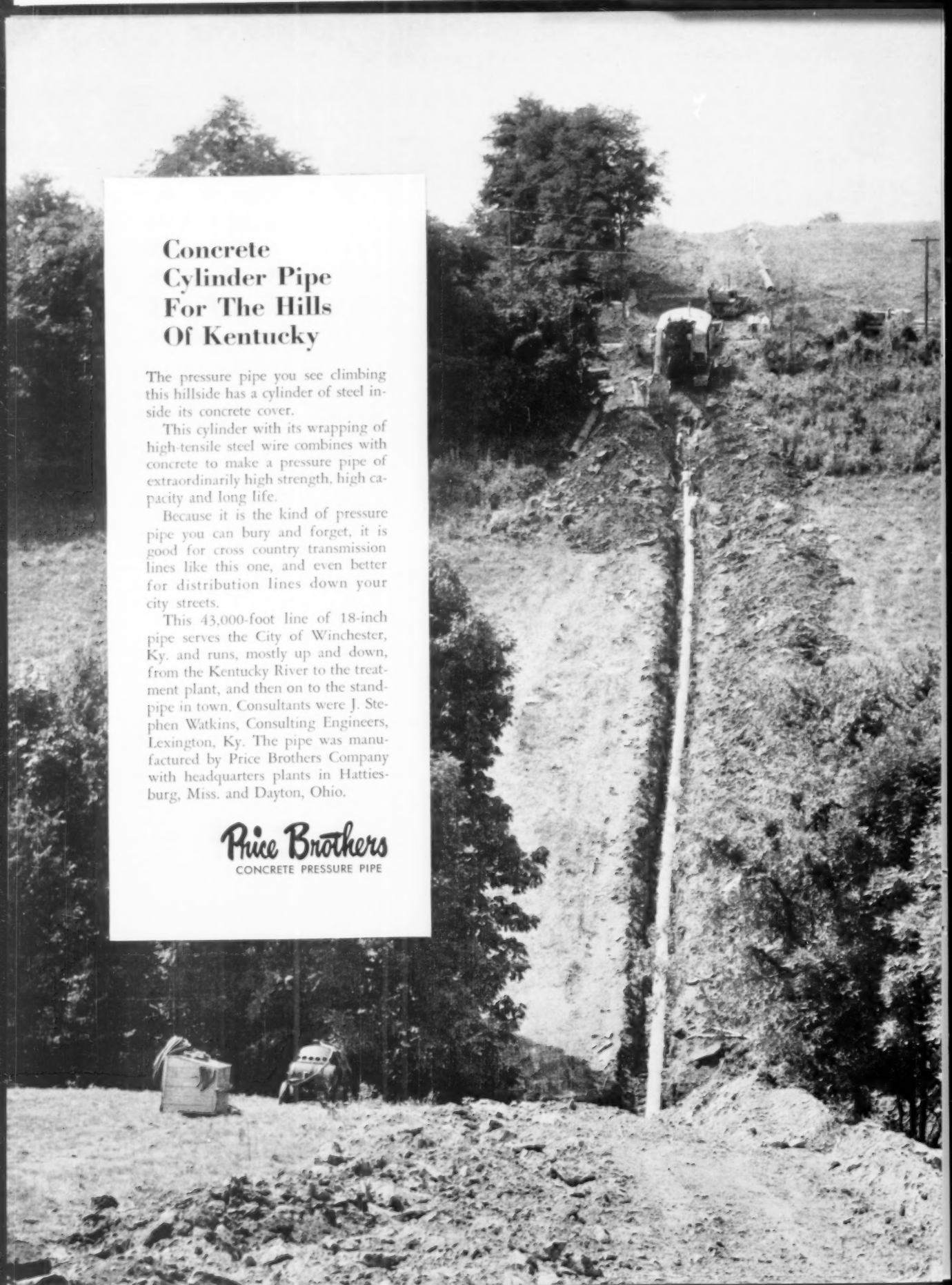


Concrete Cylinder Pipe For The Hills Of Kentucky

The pressure pipe you see climbing this hillside has a cylinder of steel inside its concrete cover.

This cylinder with its wrapping of high-tensile steel wire combines with concrete to make a pressure pipe of extraordinarily high strength, high capacity and long life.

Because it is the kind of pressure pipe you can bury and forget, it is good for cross country transmission lines like this one, and even better for distribution lines down your city streets.

This 43,000-foot line of 18-inch pipe serves the City of Winchester, Ky. and runs, mostly up and down, from the Kentucky River to the treatment plant, and then on to the standpipe in town. Consultants were J. Stephen Watkins, Consulting Engineers, Lexington, Ky. The pipe was manufactured by Price Brothers Company with headquarters plants in Hattiesburg, Miss. and Dayton, Ohio.

Price Brothers
CONCRETE PRESSURE PIPE

How Diatomite Water Filters Are Performing

Vacuum diatomite filters show increased use in potable and industrial water systems

By H. N. ARMBRUST*

The use of diatomite filters in potable and industrial water systems during the past few years has shown a steady increase. Not only has the number increased but the quality of the units has improved. The use of this type of filter in swimming pools is well known—of some 10,000 municipal and institutional pools built in 1958, 53% were filtered by diatomite units.

But these filters also are proving themselves in public water-supply systems, paper and metals production and other operations, where they must demonstrate high degrees of impurity removal.

The pressure filter is gradually losing favor. Until recently, all diatomite filters were of this type, with the filtering surfaces enclosed in a pressure vessel. Even with observation ports the operator found it difficult to be sure that filter medium was properly applied and that all water would be filtered as it passed through the unit. Backwashing in the pressure filter also was uncertain because it was impossible to know just how clean the washed filter tubes or leaves actually were.

The vacuum filter, on the other hand, is an open-tank installation, with porous filter leaves or tubes within the tank, connecting to the effluent system on the downstream side of the filter. The effluent system is usually connected to the suction side of a centrifugal pump rated for the desired capacity against a total dynamic head of the normal back pressure plus maximum suction that will be developed at the end of the run as filter cake builds up. This varies as a rule from 17 to 22 feet.

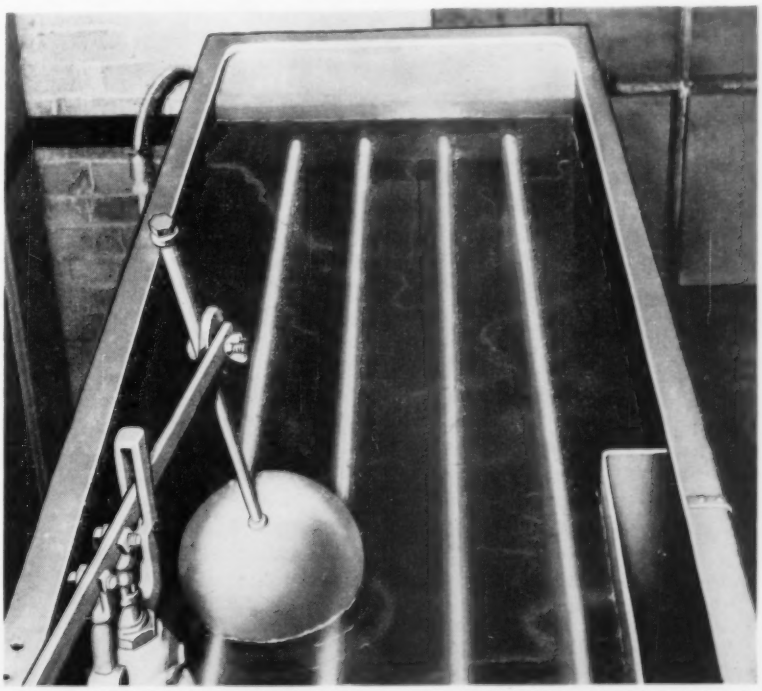
Because of its open construction it is usually possible to observe the filter cake throughout the entire run. When the end of the run approaches, the effluent and influent valves are closed (manually or automatically), the tank is drained and spent cake—with filtered material attached—is rinsed or washed from the elements with the stream from a hose or by the use of spray nozzles. This method of cleaning has been found more efficient than back washing by reverse flow. Thus, because improper operation or inadequate coating (either precoat or body feed that is introduced in slurry form) can be readily detected and remedied, the vacuum filter has proved more efficient and trouble-free than the pressure filter.

The diatomite filter, like a slow sand filter, works best at lower rates of flow. The usual design rate of such filters for potable or industrial water is between one-half and one gallon per minute per square foot of filter area.

While the pressure diatomite filter is limited in size by expensive—and often difficult—problems of closure on larger units, the vacuum filter is open to the atmosphere. It is designed to support only the maximum head of water in the tank, which is usually less than six feet.

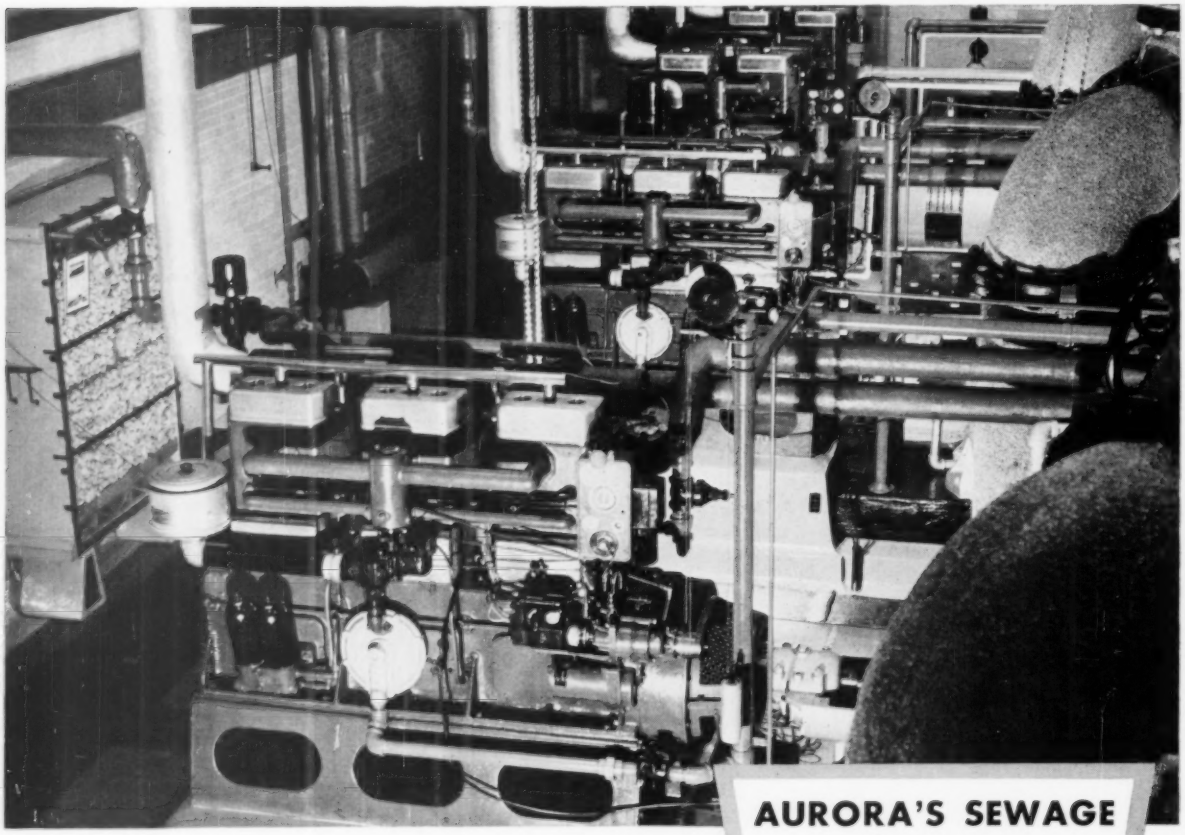
Tanks for the vacuum-filter unit, therefore, can be built of fiberglass-reinforced plastic with steel framework, steel and even concrete. Vacuum filters now in waterworks systems range in size from 108 square feet of filter area to 648 square feet (108 gpm to 648 gpm). Larger units are a practical consideration.

It has been found that acid cleaning of elements in reinforced-concrete tanks and in both lined and



This Proportioneers Model VFL leaf-type vacuum diatomite filter has been in operation at Winterport, Maine, since the early part of 1959.

* Mr. Armbrust is a project engineer with B-I-F Industries, Inc., Providence, R. I. Many points discussed in this article were described by the author at a recent meeting of the New England Water Works Association.



AURORA'S SEWAGE TREATMENT PLANT has been POWERED by these

for over 22 years

CLIMAX ENGINES

The Aurora Sanitary District, Aurora, Ill., installed two 75 hp, six-cylinder Climax pump engines in 1936. These direct-connected engines performed so well—always starting under load—that, in 1940 two 50 hp Climax engines in generator sets were added. All four engines had sewage gas and gasoline carburetors. In 1953, gasoline was replaced by natural gas as standby fuel. This gave the plant four-way safety—duplicate engines . . . two fuels . . . two ways to start generator engines . . . freedom from electric storm interruption. After 22 years, 8 months, pump engines had paid for themselves 4.78 times; generator engines 2.5 times after 17 years. Year after year Climax engines keep on making records like this. 40 to 610 hp; V-type—four models, 8 and 12 cylinder; in-line type—four models, 4 and 6 cylinder. Capable of operation on sewage gas, natural gas, butane, gasoline, or any combination. Send for complete power chart and bulletins.

CLIMAX ENGINE MANUFACTURING CO.
DIVISION OF WAUKESHA MOTOR COMPANY
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unlined steel tanks is inadvisable. Filter elements should be removed for this operation unless they are installed in fiber-glass-reinforced plastic tanks.

While tubular elements are most common, leaf-type elements offer more plane surface, making them easier to inspect and clean. The element is an open core of fabricated metal or plastic, connected on the downstream side to the filtered-water manifold. The core is covered with metallic wire cloth, perforated sheet metal or by plastic cloth (Orlon, Dacron, Nylon or polyethylene).

Plastic elements have displayed several advantages:

1) Corrosion difficulties are eliminated;

2) Electrolytic failure due to deposits of particles of iron oxide—and subsequent galvanic action and sacrifice of septum materials—is eliminated;

3) Fewer insulating connections are necessary.

Research

Two valuable series of experiments have stood out among research programs dealing with diatomite-filter use. Dr. E. R. Baumann, professor of civil engineering at Iowa State University, ran extensive tests on diatomite filtration of iron-bearing waters, from September 1958 through May 1959, using both pressure and vacuum filters. His work, under a research grant from the National Institute of Health, U. S. Public Health Service, to the University, proved conclusively, he reports, that the vacuum filter is simpler to operate and is more easily observed and maintained.

Mr. G. R. Bell of the Johns-Manville Research Center, Manville, N. J., supplemented an earlier study of problems of filter aids and septums with an extensive comparison of pressure diatomite filters and a conventional sand-filtration plant, using the waters of the Raritan River as a source.

Significant cost data were compiled that pointed up the economic practicability of pressure diatomite filtration. The pressure filters used in these experiments required a pump designed for a total dynamic head of 100 feet (for a 2-mgd plant), but a vacuum filter to handle the same flow volume would require only 35 to 45 feet of total dynamic head so that the initial cost would be lower for the latter unit. The pressure filter can be operated to higher differentials, so the cost of diatomite medium might be lower than for the vacuum filters, but this might be equalized by the easier maintenance and operation of the vacuum filters.

A vacuum diatomite filter purifying a public water supply has been in operation at Winterport, Me., since early in 1959. Water is drawn from a stream-fed reservoir, with turbidity at times more than 100 ppm. Removal of the turbidity had been satisfactory, and though there is some color present in finished water, it is within allowable limits.

An experimental 200-gpm leaf-type vacuum filter on intermittent duty at Jamestown, R. I., was operated for about a year on both coagulated and settled water that had received prechlorination and chlorine-dioxide treatment only. Results were very satisfactory; during most of the year good water could be economically produced without coagulation. During periods of high color (sometimes exceeding 100 ppm), coagulation was needed to re-

Planning a water main?

BOSTON ***chose***
STEEL PIPE
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AWWA standards

Last year Boston's Metropolitan District Commission Water Division completed an important water main extending three miles through Newton, Wellesley and Needham. They chose tar-enameled and wrapped *steel* pipe with mechanical and welded couplings in 36, 48, and 52-in. diameters in 40-ft. lengths.

Workers of the Wes-Julian Construction Corp. of Dedham are shown laying a 40-ft. length of the 52-in. pipe near Newton.

STRENGTH
TIGHTNESS
ELASTICITY
ECONOMY
LONG LIFE

...these are inherent qualities of fabricated *steel* pipe. Compare *steel* pipe with other types . . . you'll see why "wherever water flows, steel pipes it best." You can always specify *steel* pipe with confidence.

For your copy of the latest steel pipe brochure, write—

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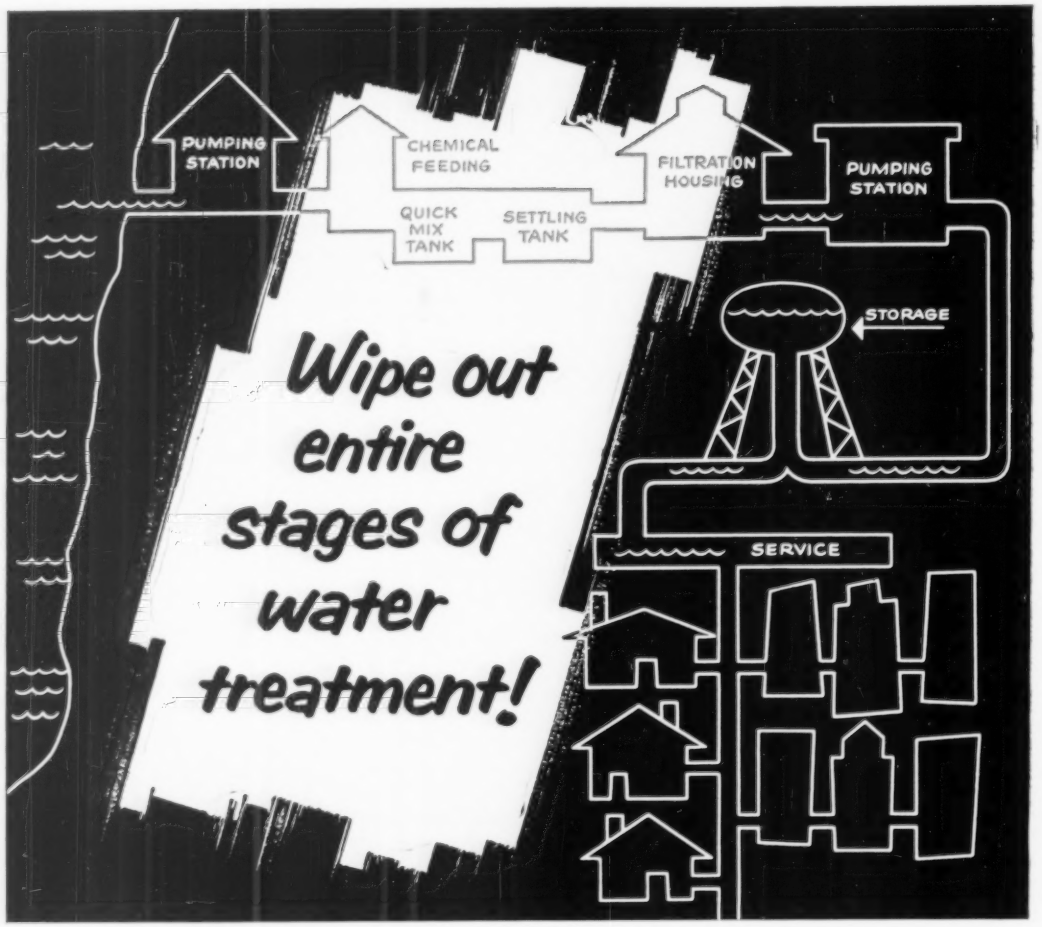


A complete Celite diatomite filtration system can eliminate the costs of conventional pre-treatment facilities

Now you can do something about skyrocketing per capita water consumption costs—as are dozens of municipalities every year. And get clearer, sparkling-bright water in the bargain!

Install one of today's small compact diatomite filtration plants, using Celite* filter aids. In many cases, raw water can be filtered directly, eliminating several of the costly conventional pretreatment stages—flocculation, quick-mixing tanks, and settling tanks, for example.

Result†: Filtration plants requiring only ¼ the space of sand plants of equal capacity. Capital costs cut almost in half—savings of up to 45%.

Here's why. Celite diatomite filters better than any other medium. Every cubic inch of the skeletal diatomite particles contains millions of microscopic filter pores. These are so minute they remove all suspended solids, including amoebae and algae, without flocculation.

Mined by Johns-Manville from the world's purest commercially available diatomite deposit, Celite is carefully processed for uniformity. You have a wide choice of grades for best balance of clarity and flow rate. For further information, call your nearby J-M Celite engineer. Write direct for free technical reprints and illustrated brochure. Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

* Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

† See *Comparison Studies of Diatomite and Sand Filtration* by G. R. Bell, Journal American Water Works Association, September, 1956, or write for free reprint.

JOHNS-MANVILLE JM

tain acceptable limits. The experiment proved that the over-all cost of treatment would be about the same as that using an existing but satisfactory old sand filter. If a new filter were required, the diatomite filter would be more economical, it is believed.

On the basis of these and other installations, a definite pattern of advantages of gravity-vacuum filtration and its limitations has evolved.

Principal advantages are:

1. A higher degree of clarity in the effluent.

2. Ability to remove suspended solids with or without coagulation.

3. A high degree of bacteria removal.

4. Excellent removal of algae.

Limitations are:

1. While "apparent color" is removed, removal of true color without coagulation is very low.

2. Alum floc carry-over will clog filter cake rapidly, causing short runs.

3. Although 60 to 100 ppm of turbidity have been removed economically without coagulation, occasionally, even at low turbidity, filter runs have been short and filter aid and labor costs have been high.

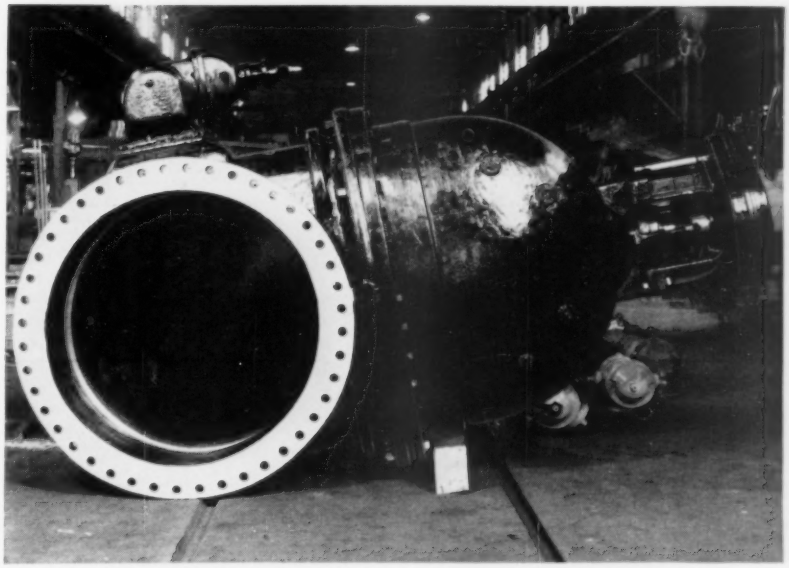
4. Iron floc reacts like alum floc and will shorten filter runs if allowed to be carried to the filter.

Conclusions

Those interested in development of diatomaceous earth filtration agree that a proposed diatomite filter-plant project should be handled under guidance of a competent consulting engineer; that full chemical and physical data be obtained on the water and that a series of pilot runs be made if possible on the water during periods of highest turbidity and algae growth.

They believe that Health Department Engineers should permit pilot-plant operation or give provisional approval to installations that are close to plant size, i.e., one filter of a proposed gallery, so that operators can gain experience in handling an actual component of the proposed plant.

Above all, those who have been involved in existing experimental—and permanent — vacuum-filter operations are convinced that consulting engineers often do their clients an injustice if they do not investigate the applicability of diatomite filtration to municipal water-supply systems.



Whatever your A.W.W.A. Valve requirements . . .

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KENNEDY VALVE

THIS KENNEDY A.W.W.A. Valve, now in service, is a 48" KENNEDY fig. 561AEM nonrising stem flanged gate valve with enclosed cast steel cut teeth spur gears and 8" by-pass. Railroad tracks in the foreground indicate overall valve size.

Here's another practical demonstration of KENNEDY Valve's ability and experience in providing the right valve for the job, regardless of size.

Since 1877, KENNEDY Valve has been manufacturing quality valves, some of which are still in service. This KENNEDY experience and know-how can help you cut maintenance costs with long, trouble-free service life.

So, whatever your A.W.W.A. Valve requirements, consult KENNEDY *first*. Be sure to get the best!

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We know brakes and transmissions are extremely important for Police work. That's why we spent so much time and money making the best ones we could to put in all Solid '60 Plymouth Police Cars.

New Plymouth Total-Contact Brakes wear well.

This year, in every Solid Plymouth Police Car, Chrysler engineers have introduced a new type of Total-Contact Brakes with three-platform staging. It reduces brake fade, brake adjustment and adds lining life. Three newly-developed "platforms" carefully guide the shoe against the drum. They assure extremely accurate alignment for each brake shoe, help eliminate brake noise, too. And, all Plymouth Police Cars have oversized, heavy-duty 12-inch brakes with 251-square-inch lining area as standard equipment. They also have two cylinders instead of just one in each front brake like some other cars. It adds up to excellent brakes in Plymouth Police Cars.

Heavy-duty transmissions are ruggedly built.

Chrysler engineers have developed new heavy-duty transmissions with beefed-up parts for extra rough and tough wear. As a result, in 1960 the new manual transmissions for all standard Police engines are really rugged with many long-wearing features. Plymouth's push-button automatic transmissions are all built for heavy-duty work, too. They are the three-speed New TorqueFlite-6, the three-speed TorqueFlite and the two-speed PowerFlite. All automatics in the Solid '60 Plymouth Police Cars are available at moderate extra cost.

Visit your Plymouth dealer today. Ask him for a free Police Booklet. There's no obligation.

A Chrysler-engineered product, built a new solid way to give you solid satisfaction.

SOLID PLYMOUTH 1960

Where Policewomen Are Better than Men

By **THERESA M. MELCHIONNE,** Director
Bureau of Policewomen, New York City Police Department

In New York a policewoman possesses the same powers as a patrolman. She receives the same salary and the opportunity for assignment to the detective division. However, policewomen are detailed to police assignments which can most effectively be performed by women.

Two-thirds of New York's 253 policewomen are engaged directly in the detection, investigation and apprehension phases of law enforcement; they are assigned to the Bureau of Policewomen, to the plainclothes division for the suppression of vice and gambling, and to other specialized detective squads. The other third is assigned to the prevention of crime among children.

The policewoman's introduction to the investigative function begins with her assignment to the Bureau of Policewomen. The Bureau is primarily concerned with the protection of women and children. Working in teams of two or three, policewomen in civilian attire patrol areas where complaints indicate the presence of degenerates, shoplifters and jostlers. Patrol in a darkened motion picture theater, where seasoned jostlers often work in pairs to reduce the risk of detection, is a difficult test of individual skill and team coordination.

The use of policewomen in these cases is necessary, for these offenders become wary when the presence of male officers is suspected. In the case of degenerates, the direct evidence necessary for a court conviction can best be obtained by a policewoman. Civilians are reluctant to file complaints and their embarrassment makes them poor court witnesses. Recently young women were accosted outside a theatrical employment agency and handed a business card by a man who promised employment on TV programs to those who telephoned him. What followed brought frantic telephone calls to the police, but the victims refused to file charges, fearing publicity. Policewomen were detailed to the area, and soon one of them was handed the business card. When she phoned, the man persuaded her to meet him in a hotel lobby and promised to introduce her to a TV executive.

There, the so-called TV "executive" made improper advances explaining that only through "cooperation" could a young, inexperienced woman win consideration for TV jobs paying up to $600 a week. Needless to say, both men, the solicitor and the alleged executive, were arrested and convicted.

But policewomen can also be uniquely used in another aspect of the investigative function: *surveillance*. Where it is necessary to learn the nature and extent of a suspect's illegal activity, or the identity of his associates or victims, the policewoman can participate by "tailing," by obtaining employment in the area of the suspect's operations, by casually frequenting the suspect's social circles.

Greater use is also being made of policewomen in the investigation of homicides, kidnappings, and assaults. Where sex appears to be an aspect of the crime, female officers have been successful in obtaining information from women who may be reluctant to discuss delicate or sordid matters with male officers.

"A woman may fool a man but she knows she'll never fool another woman."

This article is taken from an address before the 66th Annual Conference of the International Association of Chiefs of Police, held at the Hotel Statler Hilton, New York City on September 28, 1959.

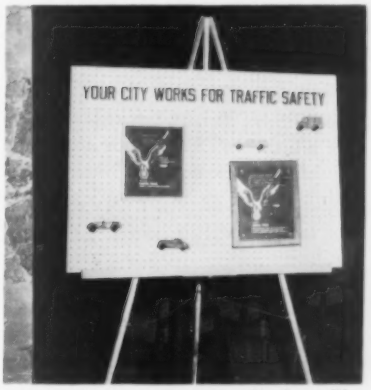
Austin Uses Displays in Public Relations Program

When the City of Austin, Texas received two municipal awards, the Certificate of Achievement for Police Traffic Supervision for 1958 from the International Association of Chiefs of Police and the Certificate of Recognition for the maintenance of a high level of performance in traffic engineering from the Institute of Traffic Engineers for 1958, we wanted the citizens to see the awards.

They were placed on a simple pegboard base with the title "Your City Works for Traffic Safety," as illustrated. The display was placed in the lobby of each of the city's major banks for a two-week period.

The effectiveness of colorful bulletin boards telling of special events had been proved at City Hall. Austin owns both its water and light utilities and the collection office for these two departments is located on the first floor of the municipal building which occasions a considerable amount of traffic there. Two large bulletin boards have been placed in the direct path of the customers. One of them was located at the front of the building and the other at the rear of the collection office.

TERRELL BLODGETT
Assistant City Manager
Austin, Tex.



Austin plans to continue displays like this one in a local bank lobby.

Sixth Year With Garbage Grinders

By HERBERT S. ROTH*
Village Engineer

Garbage collection and disposal can present to the municipal administrator one of his most annoying problems. From time to time the housewife deposits leftover food in her garbage can; until the waste materials are in some way disposed of, the disposal of this household waste is in our hands and is often a serious problem. Whether we deposit it in an adequate incinerator or compost it, the collection, transportation, dumping and covering (in the case of landfills), sorting for incineration, or composting make the disposition of garbage a major job for us to handle. And the more hands that touch these wastes and the more places it is moved, the greater the cost to the taxpayer.

The village of Shorewood Hills is nearly surrounded by the City of Madison, Wis. Shortly after World War II the village board had to decide whether to provide a sanitary landfill, secure and maintain an incinerator, or be willing to experiment with the garbage grinder then a new method of garbage disposal. The village dump of two acres was far too small; moreover it was surrounded too closely by residential neighborhoods. To buy land on the outskirts of Madison for a landfill development would have been costly with land values steadily increasing due to urban development. The village realized that incineration would be far too costly to provide disposal of refuse from 500 properties and a population of 1,600.

The village had been hauling the garbage to farms for feeding to swine but this method was no longer feasible as health regulations would soon restrict such feeding. The one method left was disposal by the use of garbage grinders with the ground garbage to be discharged into the village sanitary sewerage system. This plan adopted was described in THE AMERICAN CITY (Feb. 1953).

This method eliminated handling and disposing of garbage and odors from it, and reduced the problem of housefly control. The householder was freed from garbage wrapping and from carrying the waste to the garbage can as well as from the periodic can-cleaning chore.

Upon inquiry the village board was informed that the metropolitan sewerage system could process a load such as would result from village grinder operations. Sewerage commission officials also indicated that they felt ground garbage would not cause difficulties at the disposal plant. (A recent check with these official indicates that the solids content of Madison sewage has not changed in the last ten years.) Village officials feel that grinder installation has increased greatly within the city itself without adverse effect on the sewage solids content at the metropolitan sewage plant.

Specifications were drawn for disposal units which had met the rigid testing of the Chicago Testing Laboratory, described in THE AMERICAN CITY for June 1949.

Title Held by Village

An important requirement, outlined in the ordinance, was that title to all newly installed grinders and purchased grinders would be with the village. The individual resident was not required to accept a village offered grinder (all did with one exception and this connection was made in 1958). Nor was the individual resident required to sell his unit to the village unless he wanted to do so. However, an ordinance was drafted to prohibit anyone from storing or hauling garbage over village streets, and municipal collection of garbage was stopped. Under these conditions there apparently was left but little choice in the matter. Maintenance of the grinders and the waste line from the grinders to its connection with a larger waste line were village responsibilities.

In one case a large commercial grinder was installed, with the village and the owner sharing the costs of its installation. The entire village is now served with the exception of about 50 homes and several restaurants in a newly annexed area. (These, of course, will eventually conform to village regulations.)

Grinder operation, as a method of disposal of garbage, has been a success in the village. In 1953, 415 grinders, chiefly General Electric, were installed for $52,293 and with the purchase of grinders from owners and payments to them for bypassing grease traps, the total installation cost was about $61,459. In four years, with the installation of additional grinders to the 50 new homes and including the cost of owners' grinders, the total costs of the project are about $73,945.

The original warranty of the grinders carried for five years and with this now running out we feel that maintenance costs may increase up to 1963 or 10 years from installation. This, it is believed, is the serviceable life of the average grinder. By 1963, the village expects to have the entire cost of the project amortized and will be able to meet expenses with an annual appropriation slightly in excess of the present $9,000. Operating cost is $5.50 per capita or about $22 per family.

Sewer maintenance costs have not been adversely affected by disposal operations due primarily to the fact that the majority of village sewers have steep grades and high scouring velocities. Municipal officials should consider existing sewer grades and the effect of increased treatment plant loads from disposals if they wish to use this method.

* Mr. Roth is the Village Engineer and Administrator of Shorewood Hills, Wis.

Illinois Approves Plastic Pipe

Illinois, in its new plumbing code, has approved the use of plastic pipe and fittings for certain specified applications. The acceptance covers plastic pipe and fittings for house or building sewer connections, for drainage and vent piping within the building, and in cold-water piping systems outside the building, walls or foundations.

The new Illinois plumbing code specifies that plastic pipe and fittings, plastic cement, and pipe-thread lubricants for rigid plastic pipe shall be approved by the National Sanitation Foundation and carry the NSF Seal of Approval on the pipe. The code also requires that the manufacturer, material and trade name shall be included in the "Seal of Approval Listing of Plastic Materials, Pipe and Fittings for Potable Water Supplies" compiled by the National Sanitation Foundation, at the School of Public Health, University of Michigan.

California, Kentucky, Maine and Wisconsin have approved this pipe.

The new incinerator at Whitemarsh. Note the neat compact lines of the building and the low stacks of the wet scrubbers which emit only a plume of steam. Glace & Glace Inc. were consulting engineers for the project.

Only these four men are needed to operate the plant: One man to weigh incoming trucks and supervise unloading, a second to operate the conveyor, a third to load and drive the truck carrying away the non-combustible residue, and a supervisor.

Storage conveyor consists of two, 50-ton capacity oscillating hoppers placed side by side but independently controlled. Material is moved to feeders in a series of short reciprocating arcs. This action is self-scouring and keeps the storage trough completely clean.

NOW SERVING 50,000 RESIDENTS . . .

NEW PRINCIPLE INCINERATOR

eliminates mess and fumes—is economical to operate

Designed to burn 12½ tons of refuse *per hour* without odor or dirt, this new incinerator is in operation at Whitemarsh, Pa. In addition to garbage, tin cans, lawn trimmings and wastepaper, the incinerator handles undigested sludge from an adjacent sewage plant. Located in a residential section, plant exterior and landscaping are designed to harmonize with their surroundings.

The Dravo Incinerator has a number of unique features. Of primary significance are: the continuous flow design, which permits rapid and easy handling of the refuse; the water wall furnace, which permits the use of sufficiently high temperatures to provide thorough combustion and the elimination of noxious odors; and the wet scrubber and residue disposal system, which together promote the maintenance of healthful cleanliness.

Automatic operation has been stressed, only four men are required to run the entire plant. Present needs demand operation of the plant for only one 8-hour shift, but since it can be run on a 24-hour basis, there is adequate capacity for future needs.

The Dravo Incinerator is the economical solution to the problem of sanitary, convenient refuse disposal. For full information, write or call DRAVO CORPORATION, PITTSBURGH 22, PENNSYLVANIA.

DRAVO
CORPORATION

Select Police Automobiles For the Exact Service

By WILLIAM F. JOHNSON
City Buyer
Louisville, Ky.

We had been continually increasing our horse-power requirements in police vehicle specifications in an attempt to provide the police department with vehicles which could cope with law violators in this municipal area. We had increased our engine requirements—up to horsepower of over 300—for all police vehicles.

By the latter part of 1958, because of the idling-motor time and the slow traffic conditions which occur in city police operations, the engines were becoming filled with sludge, the valves were sticking and it was difficult to maintain proper timing of the ignition and carburetion. This was causing losses of time and money and vehicle usage.

Continuous high speeds are not nearly as essential in police work as quick apprehension of a law violator. The police agreed that quickness of apprehension is more important and much more effective than long pursuit.

Upon this change in police philosophy, we reduced our horsepower requirements to 145, 185 and 225 horse-power, with some 300 horsepower being retained for use on expressways and for auto theft and squad duties. We also included the requirement that the gear ratio must attain maximum performance in acceleration and we specified automatic shift.

After the police department became convinced that the highest horse - power rating in their vehicles was not the sole answer to their police problem and, in fact, was further complicating it, they gave full cooperation in attempting to select the proper vehicle to do a specific job.

Since the above changes in vehicle purchasing philosophy were made we have purchased some of the small cars for police operations and the police department is requesting more of them.

Automobiles used for service resembling taxicab service and never used for the apprehension of auto thieves and dangerous criminals, can be small in size with low horsepower. Examples of cars falling into this category would be cars used for traffic safety education, detective bureau laboratory wagons, and certain vice squad cars and juvenile bureau cars. The car being used for this type of service can be any of the smaller makes with horsepower of 145 or less.

Patrol

Patrol cars being operated in congested commercial areas where there is a lot of idling and gear shifting can use a car with 180-hp V-8 engine with automatic gear shift. The small body with short wheel base makes this car adaptable to congested areas.

The average patrol car to be used in districts or precincts for patrolling beats should contain a motor with a horse-power of at least 185 with automatic gear shift. The present engines that provide this horse-power have proved to be excellent for this type of service. The automatic gear shift costs very little more to purchase and to operate and will provide maximum service without repairs. Clutch and gear transmissions will not absorb the punishment they receive in the constant stopping and starting of patrol cars.

"REMEMBER NOW, IT'S JUST THEIR WORD AGAINST OURS!"

From the 1959 Book of Street and Highway Accident Data published by the Travelers Insurance Company, Hartford, Conn.

Fast Run

There are assignments in police service that require maximum performance in automobiles. This is especially true of the following types of service: detective robbery squad; detective burglary squad; detective auto theft squad; traffic accident investigation; traffic selective-enforcement officers; and commanding officers. These police officers quite frequently are required to make fast runs for both apprehension and first-aid service. It is recommended that automobiles with interceptor engines and automatic gear shift be provided for this service. For special service such as the auto theft squad, it is recommended that the 300-hp engines with automatic gear shift be provided.

From experience it has been learned that the interceptor automobile engines will not perform efficiently if they are used in squad cars that patrol most of the time at very low speeds. They also fail to function efficiently if the motors are allowed to idle over long periods of time. The interceptor type engine must be driven at fast speeds most of the time in order to maintain peak efficiency.

The most practical all around police car is the 180 to 200-hp car with automatic gear shift. There are some assignments that have occasional need for either a faster car or a more economical car. The medium powered motor is not capable of apprehending many of the automobiles being stolen or being used in the commission of serious crimes. There can be, also, greater economy in the performance of other police services where the low horse powers can be used. These are all matters that need to be determined by the chief administrator of a police department.

This article gives police administrative thinking in Louisville.

Keep your parks, playgrounds and playing fields in use after sundown ...with money-saving WIDE-LITES

Wide-Lites add hours of enjoyment every day to your recreational areas. With their exclusive rectangular reflectors, Wide-Lites give a broad, even light pattern that is essential to eliminate "hot spots" and shadows from playing fields.

Each Wide-Lite with color-corrected mercury vapor lamp will do the work of *two* or *more* incandescent floodlights—reducing the required number of poles, crossarms and fixtures. And operating on 460 volts, Wide-Lites require 50% less transformer capacity, with smaller conductor wires. Wide-Lites make practical low-cost underground wiring for floodlights!

Find out how much better lighting you can get with Wide-Lites—and how much less it costs! Send the coupon today.

Resists vandalism! Wide-Lites are made of rugged cast aluminum and have tempered glass lenses to resist vandalism and the punishment that floodlights get from wind and weather. Relamping is easy, but with 7000-hour lamp life (seven times as long as incandescent), it's seldom needed!

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OUTDOOR AREA LIGHTS · VAPOR TITE MODELS · INDOOR LUMINAIRES
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Please send me more information on Wide-Lites. No obligation, of course.

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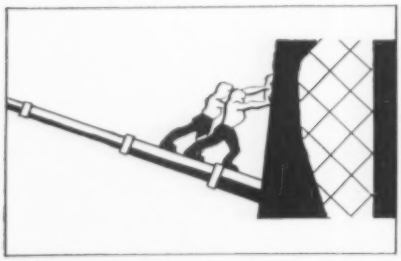
15 Hydro E-Z Packs improve operating efficiency 33%

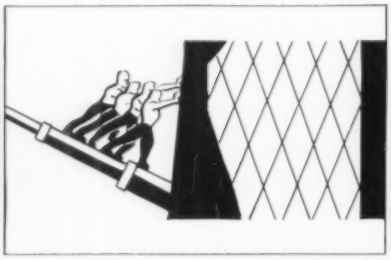
A. J. PASQUALETTI,
President,
Arizona Service Co.

"E-Z Packs reduce dump trips per truck from 5 to 3 daily"–

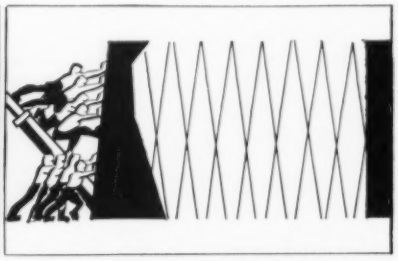
In Phoenix, Arizona, Arizona Service Co. bought its first 20 cu. yd. Hydro E-Z Pack in 1957 . . . saw that the unit was outperforming its 15 yd. trucks by 33%, and bought 14 more. Ten are 24 yd. units. A. J. Pasqualetti, President, says the big E-Z Packs reduce dump trips from 5 to only 3 daily, saving at least 1½ hours daily travel time per unit. City inspectors compliment the clean pickup with no trash windblown or fluid leaking from the watertight bodies. And the owners like the efficiency, economy and easy maintenance of their Hydro E-Z Packs! See your E-Z Pack distributor or write us for a free copy of an informative booklet, "The Big Squeeze."



Telescopic cylinder size increases as load increases. Cycle starts with 5½" section's 32,450 lb. compaction force.



More force is applied by larger cylinder sections as load gets larger, crushing all types of rubbish, garbage completely.



76,600 lb. squeeze applied by big 8½" cylinder section toward end of cycle overcomes cushioning effect, bales load.

Hydro E-Z PACK

HYDRO E-Z PACK®

HYDRO E-Z PACK DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO U. S. A.

Status of Bay Area Transit System

Tentative alignments for approximately two-thirds of the routes planned for the proposed five-county San Francisco Bay Area rapid transit system have been made public.

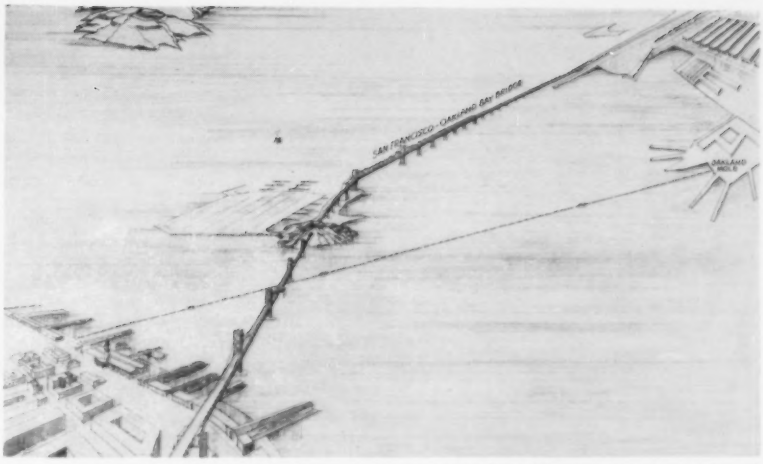
More than 120 miles of rail lines are planned on exclusive rights-of-way utilizing subway, elevated and surface routes. The system will serve the intensely urbanized counties surrounding San Francisco Bay whose total population is fast approaching three million.

Central hub of the proposed transit system will be the largest two cities, San Francisco and Oakland, to be connected by a four-mile-long underwater transit tube at the bottom of the bay.

Construction funds for this portion of the $700-million project will consist of $115 million in automobile tolls from the San Francisco-Oakland Bay Bridge and a general obligation bond issue which, if approved, will permit the system to be completed and placed in operation within five years.

The entire proposed rapid transit system calls for approximately 50 passenger stations, with parking lots capable of handling 500 to 1,000 autos at all suburban stations. The transit trains are being designed for maximum speeds of 75 miles an hour. Ninety-second intervals will be maintained between trains during peak hour operation. The system will be capable of carrying 40,000 passengers an hour in either direction.

The consulting engineering firms engaged in planning the project are Parsons, Brinckerhoff, Hall and Macdonald, the Tudor Engineering Company, and the Bechtel Corporation.



The sketch shows the relationship of the proposed underwater transit tube of the Bay Area Rapid Transit District to the San Francisco-Oakland Bay Bridge.

Saving Man-Hours and Dollars

The Electric Power Board of Chattanooga, Tenn., has put to work a Wain Roy Model WR-350 Backhoe, mounted on an International Harvester Model 350 Utility Series Wheel Tractor, with a rack full of standard and modified attachments. A standard 24-inch backhoe bucket, with a cutting blade welded to each side, prepares unusually clean, straight trenches for underground ducts. A bellhoe bucket is used for digging manholes and vaults, specializing in almost-square holes that facilitate forming for concrete. In the past, it has taken approximately 8 to 10 working days to hand-dig the 20x10x9-foot hole required for a vault. The backhoe digs the hole in 12 working hours, with about 6 hours required to hand-dress the hole for forming. The operator was trained by a factory representative in about 12 hours. The backhoe also is used for digging footings for piers in substations. The machine is also equipped with a backfill blade and a front-mounted bulldozer blade.

Traffic Signals For the Blind

A new traffic signal for blind people has been introduced in Stockholm. It is a sound signal which snaps on simultaneously with the green and off with the red light signals.

The new signals cost about $400.

Gosta Kristensson tests the new traffic device designed to let the blind cross streets in safety in Sweden.

An effective display in the Jackson City Hall, along with pamphlets on the adjoining table, helped to publicize the need for proper refuse storage.

This packer body, mounted on an International chassis, is one of five units collecting garbage from homes in the suburbs.

Jointly Sponsored Sanitation Program

City, county, state and federal participation raises level of community sanitation in Jackson, Tenn., and surrounding area, and eliminates serious health problems

By R. M. NEUDECKER*
Director

A comprehensive vector control project, encouraged and supported by the entire community, is bringing about more than an inconsequential "face lifting" in Jackson. A review of the first 18 months of our program shows that the overall level of community sanitation has been raised substantially and that serious health problems have been eliminated.

We believe that the information and techniques developed during a joint-demonstration project with state and federal agencies will provide a sound basis for future work in Jackson and the surrounding area. We are already conducting seminars for interested officials from other cities of Tennessee, Missouri, Kentucky, Mississippi and Arkansas.

The program in Jackson is jointly sponsored by the City Commission, the Jackson-Madison County Health Department, the Tennessee Department of Public Health and the U. S. Public Health Service. The city furnishes office facilities, clerical personnel, insecticides and spraying crews for the project, which is supervised by the county Health Department.

Roger O. Olmsted, who conducted a similar two-year demonstration project in Kansas City, Kan., for USPHS, is technical supervisor for our program. The state provided educational pamphlets, technical assistance, and the use of its automatic tabulating machines for cataloguing important research data.

Public information and education played an important part in our plan, which seeks to improve environmental sanitation by applying specific insect- and rodent-control measures. The cooperation of civic groups, service clubs, schools and other influential organizations was secured to reach each household.

Survey Made

To ascertain the existing conditions in our area, we made an environmental sanitation survey of all premises in the city. Dividing the city into 11 socio-economic sections permitted a more scientific evaluation of the results, which could be used as a basis for concentrated remedial efforts.

Survey crews covered 11,159 premises within the city's 551 blocks, tabulating the results on special forms that had been designed specifically for this job. The survey results were then transferred to large city maps. These maps, with progress and problem areas shown by colored shading, make excellent visual aids for presentations to civic groups and visitors.

Examination of the refuse storage facilities revealed that only 4,115 premises, or 36% of the households, were using approved metal containers. Many families were using unsanitary 55-gallon oil drums without lids. Even more discouraging was the fact that 279 homes did not have a garbage container of any kind. Garbage was simply piled on the ground, and this refuse was supporting enormous fly and rat populations.

Harborage for rats, varying from a few pieces of carelessly piled lumber to large stacks of debris, provided protection for rats in more than one-half of the city's blocks.

Standing water found on 3,659 premises provided ideal sites for mosquito development but 3,379 of these were temporary sites that were immediately removed. They included cans, buckets, bottles, tubs, old tires and small pools of water.

Other major problems such as unsanitary animal shelters, outdoor toilets and industrial wastes complicated the situation.

The survey showed that only 7,662 of the city's premises could be considered "clean."

These results indicated that a

* Dr. Neudecker served as Director of the Jackson-Madison County Health Department until November, 1959 when he took over his present duties as Director of the West Tennessee Department of Health. Dr. A. J. Mueller is now Director of the Jackson-Madison County Health Department.

. . . are cut to a minimum when you treat gravel roads with Sterling Rock Salt!

Now many highway departments can cut down on spring repairs of gravel roads. Simply by treating these roads with economical Sterling Rock Salt, these departments can reduce surface breakup and aggregate loss. Because salt-treated roads stand up so well through hard winters and heavy traffic, the only maintenance needed in most cases is routine blading in the spring.

Special equipment is no longer required for effective salt treatment of gravel roads. (Any highway department should have the equipment needed.)

Last year, International Salt Company introduced a simple, practical method which is fully described in a free booklet, "Better Roads." Send today for your free copy and learn how Sterling Rock Salt treatment can work in your area.

International Salt Company
Department AC-460
Clarks Summit, Pennsylvania

☐ Please send free booklet, *Better Roads.*

☐ Have a Sterling representative call.

*Name*_____

*Address*_____

*City*_____ *State*_____

Service and research are the extras in

STERLING ROCK SALT

INTERNATIONAL SALT COMPANY

stringent garbage ordinance should be adopted, and increased collection service was necessary to help break up the fly and mosquito breeding cycles.

Many of the unhealthful conditions were pointed out in stories and pictures appearing in *The Jackson Sun*. The Jackson-Madison County Chamber of Commerce contributed to the program by sponsoring "Operation Spruce-Up," highlighting the program with a colorful downtown parade.

An intensive three-week program helped control the mosquito problem during the hot summer months. A three-man larvaciding crew sprayed 1% DDT fuel oil on actual and potential breeding sites to control mosquitoes. The crew used a Willys-Jeep-mounted Buffalo Turbine sprayer-duster, and knapsack dusters and hand sprayers manufactured by the H. D. Hudson Manufacturing Co. Ditches are being cleaned and straightened. Mosquito light traps are operated to collect adult mosquitoes to provide research data to help evaluate the effectiveness of the program's activities. A home-made fogging machine mounted on a pick-up truck also proved extremely effective in reducing the mosquito population.

Following an extensive overhaul of existing garbage-collection routes, the city initiated twice-a-week service to all residences and daily pick-up service in the business district. The Sanitation Department provides this increased service without additional men or equipment. In 1958 the city also purchased an Allis-Chalmers front-end loader for supplemental use on the sanitary landfill.

The plan calls for 20 pick-up men, 12 drivers, 9 compactor trucks, 2 flat-bed trash trucks and one hoist truck to move approximately 270 cubic yards of refuse six days a week. In announcing the new garbage collection service, the city emphasized that the program would be possible only if residents followed this simple four-point program:

1. Drain all garbage to remove excess liquid.

2. Wrap it carefully to avoid spillage.

3. Place all garbage in a 20- to 32-gallon galvanized-steel garbage can and keep the can covered.

4. Keep cans clean and wash them regularly.

On October 17, 1958 the City Commission passed a new ordinance covering the storage of garbage and rubbish. The ordinance specified galvanized-steel garbage cans because they are rodent- and fly-proof and this factor would be important in the uphill campaign for improved storage facilities.

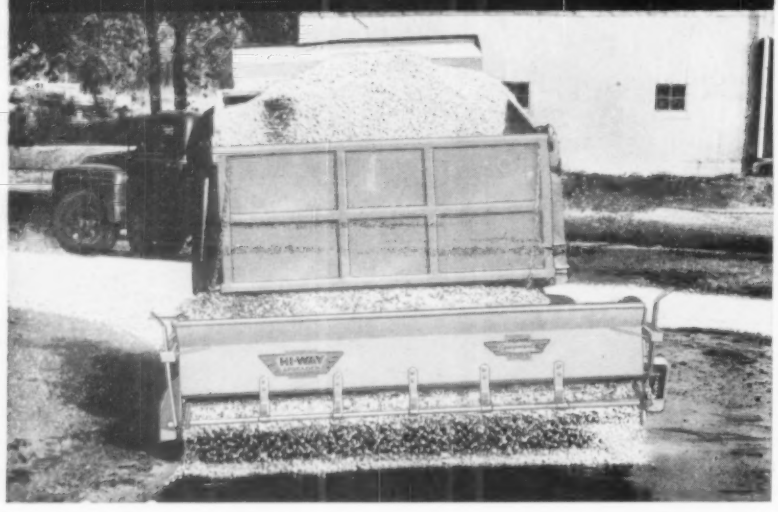
New city ordinances were also adopted to control animals and fowl, which previously were kept adjacent to residences, and to eliminate other nuisances such as piles of trash, fertilizer and garbage.

We found that it is impossible to promote a program effectively without informing and educating the public; consequently, the new ordinances had maximum publicity.

Stories and pictures in the local newspaper were, of course, the first step. We then distributed approximately 6,000 pamphlets explaining the value of metal garbage cans and showing how they should be maintained. These pamphlets were distributed by schools and by merchants, who inserted the materials in packages and invoices. Other printed materials are introduced at regular intervals.

Mayor George A. Smith devoted

HI-WAY Model R Seal Coater



Handles all Aggregate from Sand to Crushed Rock. Priced to Make Even Small Jobs Profitable!

There's a HI-WAY Model R to handle your seal coating job—from narrow 8′ drives and close-in work to 13′ roadways, using all aggregates from sand to crushed rock. A swivel type, self-coupling hitch permits fast hook-ups or disconnections with any truck. Requires no installation of cab controls. Smooth, uniform spreads are assured by a large 5½″ dia. feed roller with right and left cut spirals. Block-off plates, one 1-ft. and one 2-ft., are easily inserted for precise width of spread. Top notch workmanship and material assures minimum maintenance.

Other Model R Features

- *Available in 6 widths from 8 to 13′ with capacities up to 1.6 cu. yd.*
- *Forward and reverse transmission controlled by a single lever.*
- *Adjustable feedgate levers at both ends of spreader permit tapered spreads*
- *Feedgate follows true arc—doesn't lift against weight of material in hopper. No free flowing*

Write for the latest literature and complete specifications.

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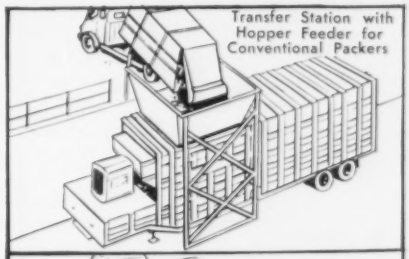
HI-WAY SALES & SERVICE Nationwide

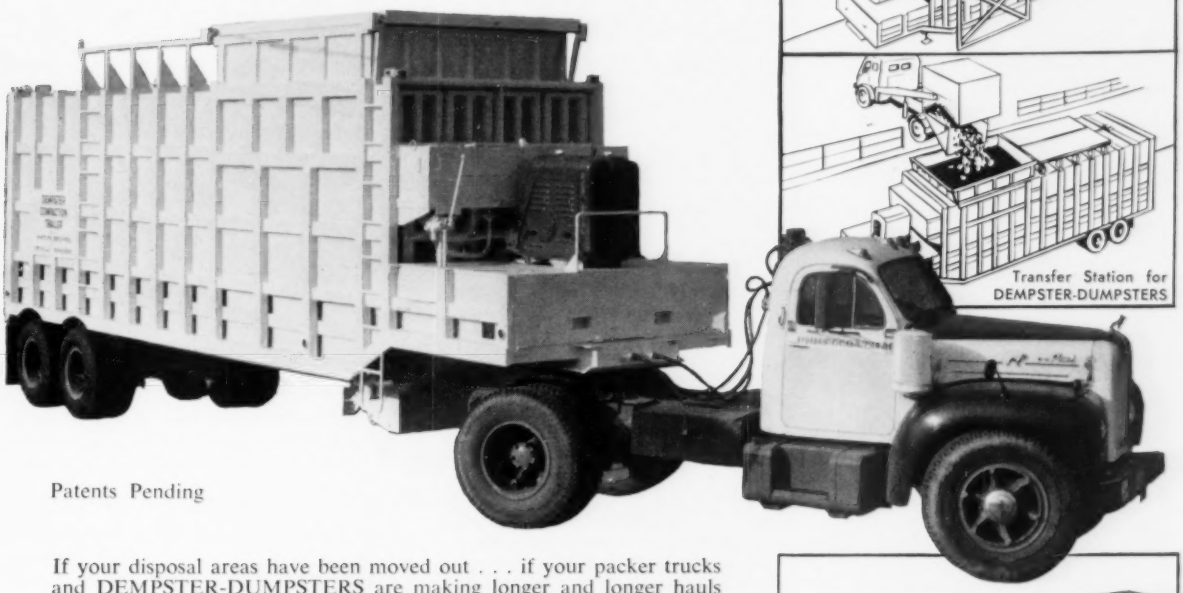
New DEMPSTER Compaction Trailer Hauls Up To 200 yds. of Loose Refuse

Giant Hopper Holds Contents of 16 Cu. Yd. Conventional Packer Truck



Transfer Station with Hopper Feeder for Conventional Packers

Transfer Station for DEMPSTER-DUMPSTERS



Patents Pending

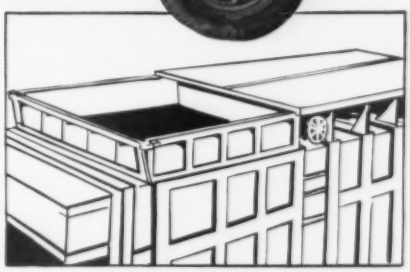
If your disposal areas have been moved out . . . if your packer trucks and DEMPSTER-DUMPSTERS are making longer and longer hauls . . . you can cut your costs to the bone with the new DEMPSTER Compaction Trailer. This portable transfer station can be placed beneath a ramp or bank in a central location. Then your trucks travel only blocks instead of miles. The big hopper itself holds the contents of a 16-yard packer truck.

One of the several cities using this new trailer stands to save over $32,000 in the first year of operation of only one unit.

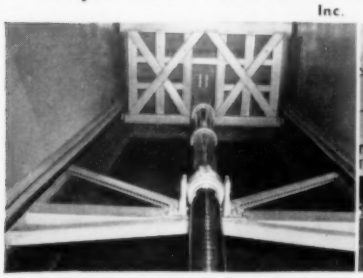
The DEMPSTER Compaction Trailer is all hydraulic, and has its own power plant. Both the 42-yard and 53-yard models deliver 60,000 lbs. hydraulic pressure to the face of the packer plate, enabling users to get (depending on the density of the material) 160 to 200 cu. yds. of loose refuse per trip.

For complete information, send for the free eight-page brochure that describes this new development.

Dept. AC4 DEMPSTER BROTHERS, Knoxville 17, Tenn.
Inc.



The rolling hopper cover illustrated above increases the capacity of the trailer and prevents refuse scattering.



Inside view of trailer showing telescopic packer head cylinder that delivers pressure of 60,000 pounds.

Typical load of refuse being ejected by the packer plate. No tilting of the trailer is necessary.

To: Dempster Brothers, Dept. AC4
Knoxville 17, Tennessee

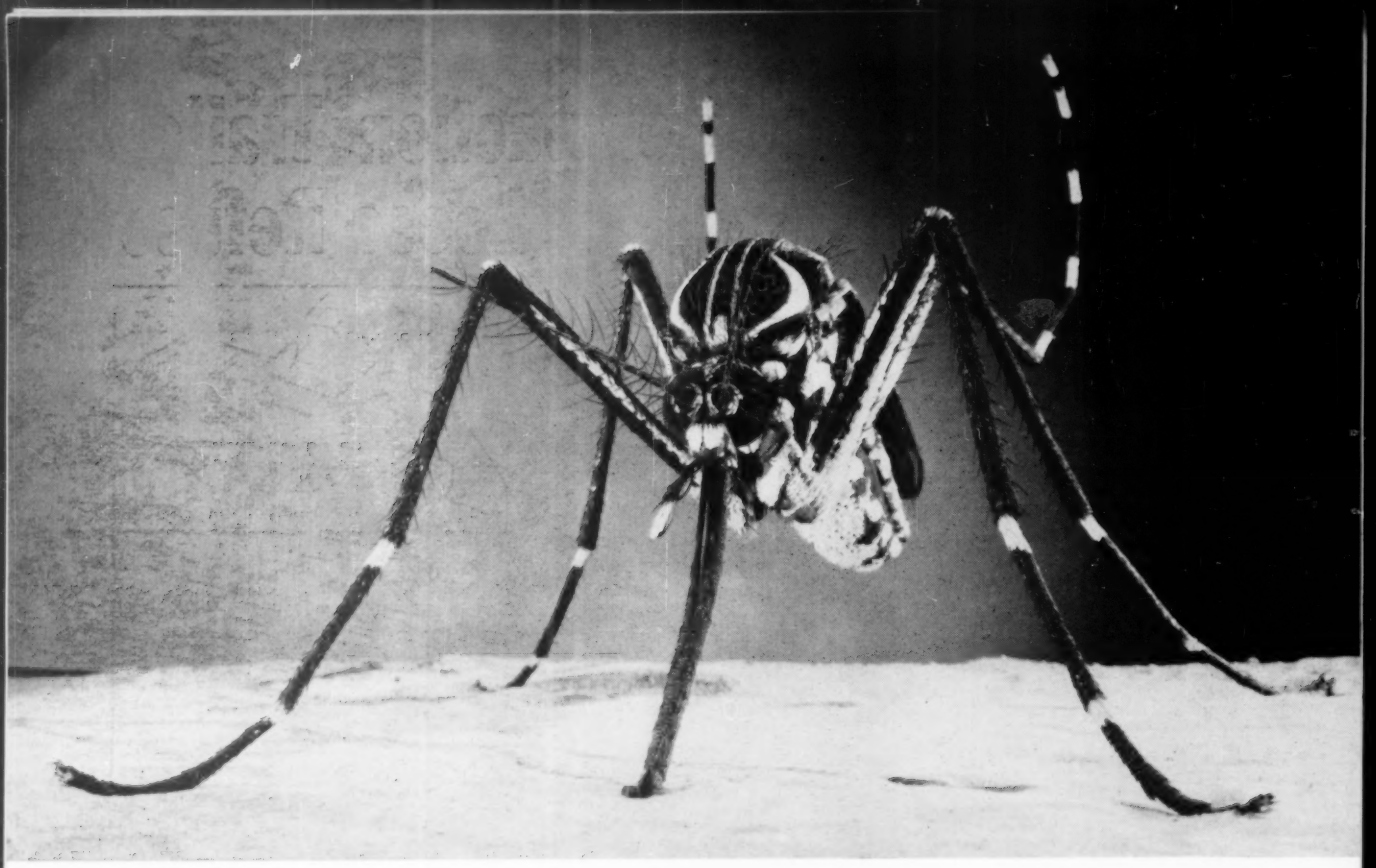
Please Send Brochure on New DEMPSTER Compaction Trailer

Name_____ Title_____

Firm_____

Address_____

City_____ State_____



NOW HE'S REALLY HAD IT!

Economical malathion-Lethane combination gives 30% better kills than presently-used insecticides ...controls resistant strains, too

60% kill of mosquitoes in area control work is no longer good enough. 90% *plus* is what you can expect with a malathion-Lethane combination. The cost? Comparable to presently-used but *far less effective insecticides.*

Controls larvae and adults

Malathion plus Lethane gives spectacular results on both life stages. While recommended rates are generally higher, 1/10 lb. per acre has given excellent control of adult mosquitoes in Florida. Hundreds of thousands of acres are being treated yearly for larvae in California at ½ lb. per acre with similar results.

Controls resistant strains

While malathion is replacing less effective insecticides in all areas, it is particularly useful in the many areas where mosquitoes have become resistant to chlorinated insecticides. Here, authorities have switched almost exclusively to malathion because it is *the* phosphate with low toxicity to warm-blooded animals. The U.S. Public Health Service reports that malathion is actually less toxic than DDT. Vector control authorities, park and city managements are specifying malathion for its combination of mosquito-killing power and safety in use. It can be applied by air, thermal fogging and mist spraying with equally good results.

Write to American Cyanamid Company, maker of technical malathion, for detailed information on area mosquito control.

Formulations widely available

Malathion formulations are supplied to area control authorities by many well-known manufacturers under their own brand names. American Cyanamid Company, Agricultural Division, New York 20, New York.

CYANAMID

MALATHION
INSECTICIDES

one of his monthly half-hour television shows to the city's Vector Control Project. City Commissioner Ben Langford and Mr. Olmsted illustrated ways each resident could cooperate with the program. A series of personal appearances before local groups also helped to present our story to the entire city.

The Sanitation Department uses bright red condemnation labels supplied by the Galvanized Ware Manufacturers Council to tag all unsatisfactory containers. The labels, gummed on one side, carry this message:

> **"This container is condemned for the use of garbage. Garbage receptacles must be made of galvanized steel or other metal which will not rust easily and can be readily cleaned; they must be provided with close-fitting covers of the same material."**

We are currently keeping our program's aims before the public with two other effective materials. More than 200 colorful health posters are on display in schools, factories, stores and city buildings. In addition, grocery stores distribute health-notice cards explaining the advantages of proper garbage storage to all customers.

Suburbs Included

In recent years the suburban area around Jackson, like that of many other cities, has shown a steady growth in size and population, resulting in the development of major sanitation problems. One of the more pressing problems facing the County Health Department was the collection and disposal of garbage.

In establishing the model vector control project, we took immediate steps to provide proper collection and disposal facilities. The Suburban Sanitation Service was formed, and the same pamphlets and materials are used in this area to inform and educate the residents. The private company uses compactor-type garbage-collection trucks on its five routes and disposes of all refuse in a sanitary-landfill operation.

Additional promotional steps included materials which explained how to build appropriate wooden refuse racks and some clubs plan to encourage the use of metal racks at commercial establishments along the county's roads.

Club members and the 12 County Community Clubs are undertaking corrective action on sanitation problems as part of the West Tennessee community improvement program. This is a competitive activity with cash prizes.

We are also promoting sanitary landfill on a modified basis as adapted to individual farm usage. Immediate improvements, such as elimination of promiscuous dumping sites along county roads, have been the direct result of club action.

This program is a real asset to the suburban area, and complements the program being conducted within the city. It helps to control promiscuous roadside dumping of garbage and rubbish throughout Madison County, and reduce the fly and rodent population in the suburbs.

We make periodic surveys to evaluate the progress being made during this demonstration project. The purpose of these re-surveys are four-fold:

1. To demonstrate the value and need for planned, random block re-surveys as compared to a strictly "complaint"—basis type of operation.

2. To establish favorable personal contacts in the field.

3. To provide data as a basis for

When it comes to your bucket jobs come to O'Brien!
See the all-power Sewerking BUCKET MACHINE for 1960!
READY NOW—the revolutionary Bucket Cleaner that completely removes sand, big roots and other heavy sewer obstructions as never before! Built extra heavy, strong and safe—important automatic features for easy operation—greater power, pull and capacity to clean more sewer at lower cost!
ASK FOR INFORMATION ON THE NEW SEWERKING BUCKET DUMPER
WRITE, WIRE OR PHONE TODAY FOR FULL INFORMATION —without obligation!
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ASK THE MAN ON THE JOB . . **HE** WOULDN'T BE WITHOUT HIS **HORTON!**

Horton Water Coolers keep water colder, longer — keep men happier on the job. Thousands of city departments, utility companies, service companies and contractors use Horton Water Coolers *exclusively.*

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SAVE LABOR
with
ROADMASTER
Hot Asphalt Plant
It's Completely Automatic

The only self-contained asphalt plant, with fully automatic aggregate batching and asphalt metering, specifically designed for municipalities. Available as stationary or mobile unit. Costs no more than manually operated plants. SAVES THE LABOR OF AT LEAST ONE MAN. Rotary dryer with forced draft. Twin-shaft pugmill with enclosed oil-bath gear box. Enclosed bucket elevator and reciprocating feeder. 400 gallon asphalt tank. Cyclone-type dust collector. Send for 8 page, illustrated brochure.

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Champion Fire Apparatus
W. S. DARLEY & CO.
CHICAGO 12

planning future activities of the Vector Control Project.

4. To maintain current records on community sanitation.

The first re-survey covered 20 blocks and 424 premises, and 45% of the households had approved garbage cans. This was an increase of 21% over the first survey. Another survey made on November 1, 1959 showed that 87% of residences and business establishments have galvanized refuse-storage containers.

Whereas on the original survey there were 585 animal and fowl shelters within the city limits of Jackson, a re-survey in November, 1959 showed that 561 (96%) of such shelters had been eliminated, chiefly through enforcement of the animal-and-fowl-shelters ordinance of 1958.

This indicates considerable proggress in promoting better refuse storage, eliminating animal and fowl shelters and improving cleanliness in Jackson. We hope to achieve our goal—90% of the city's households using approved garbage cans —within a short time.

All Utility Charges On One Bill

Mt. Prospect, Ill., now sends a single bill for water, sewage, and refuse collection on a quarterly basis, according to Harold Appleby, Village Manager.

The city operates its own water and refuse-collection services. Sewage collection and purification, however, is provided by the Metropolitan Sanitary District of Greater Chicago, for which the village acts as agent in billing and collecting charges. The District makes a charge of $2.50 a month for each residential connection.

The village currently uses a National Cash Register Machine, Model No. 3100. Having all three services billed on one bill is a convenience to the customer. Most pay their bills by check and in this way they can issue one check instead of three, which of course results in some savings to them for their banking service. The combined billing saves postage so far as the village is concerned. In addition, handling all three bills at one time cuts down on the time required for processing. By using a mailing permit, the village can use a different size than the regular postal card and can therefore use a portion of the face of the bill to carry messages.

Mt. Prospect, in 1950, had a population of 4,000. Now it is 18,000.

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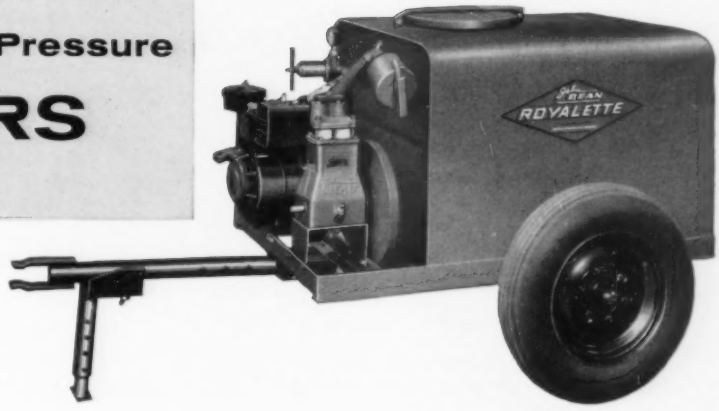

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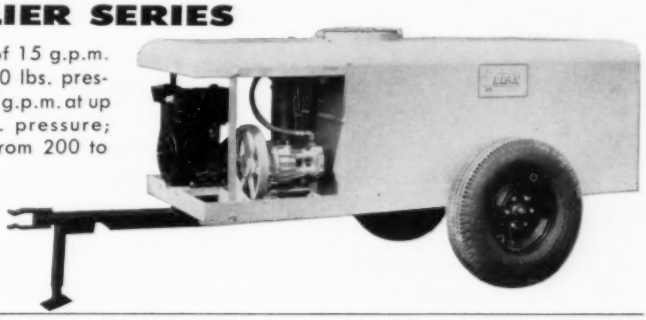
capacities of 15 g.p.m. at up to 400 lbs. pressure and 20 g.p.m. at up to 300 lbs. pressure; tank sizes from 200 to 500 gal.



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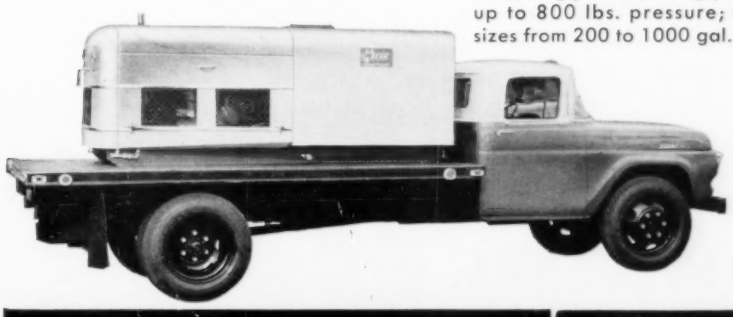

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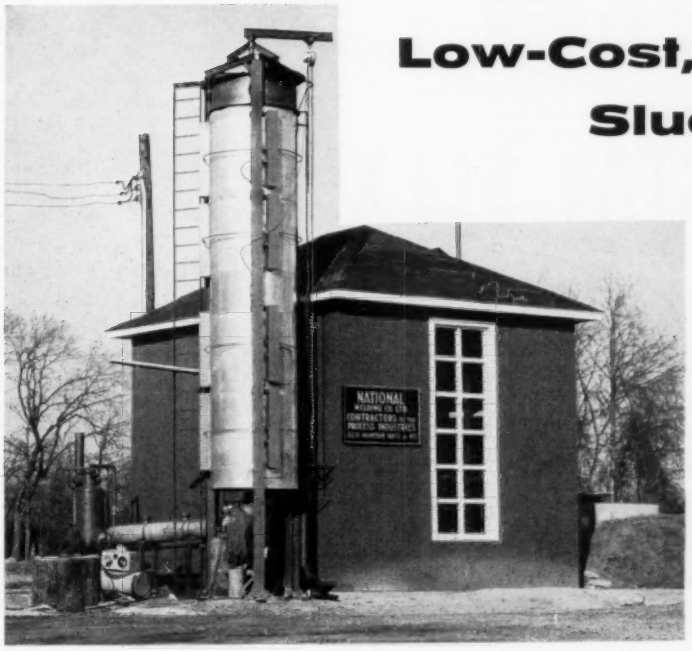
Low-Cost, High-Speed Sludge Digester

Sanitary sludge destruction by the "atomized suspension technique" proves efficient in a town installation at Beaconsfield, Quebec



The main unit of this "atomized suspension technique" plant is the reactor tower in which 10% sludge is atomized and completely oxidized. At right rear is a settling tank concentrator. Grinding, storage and automatic controls are in the building. Steam condensing and gas dissipation units are at left.

Research and development by the Pulp and Paper Research Institute of Canada, while striving to solve that industry's complex waste-disposal and recovery problems, have resulted in a sewage-sludge destruction system that shows great promise for city operations on a larger scale.

Tested for the first time on a community scale in Beaconsfield, Que. (a suburb of Montreal), the method was pronounced successful by the Beaconsfield Town Council late last year.

The method, called the "atomized suspension technique" (AST), is said to destroy completely the bacteria, odor and the organic materials in settled, primary raw sewage sludges in a unit able to serve 12,000 persons. Yet the AST equipment costs only $35,000 and occupies an area only 40 feet square.

Sulfur to Sewage

The research program started in 1950, when the pulp and paper industry was threatened with a shortage of sulfur. The PPRI sought methods of recovery of the material from spent liquors of sulfite pulping, which up to that time had been discarded.

By the end of the sulfur shortage in 1953, recovery of sulfur from spray-dried pulpmill liquor powder proved technically feasible but the cost of drying was too high to warrant installation of recovery equipment by the 26 companies that were supporting the research project.

The AST idea began with Dr. William H. Gauvin, then Associate Professor of Chemical Engineering at McGill University and a consultant to the Institute. He proposed using a diluted solution of spent liquor, atomizing it directly into the top of a heated tower (reactor) under pressures up to 150 psig.

The Institute carried forward small-scale exploratory studies and found that—with atomized liquor—sulfur recovery was much faster. It also found that atomized droplets would evaporate rapidly, leaving a cloud of solid particles suspended in a vapor of super-heated steam. Thus, in atomized suspension, the cloud moved down the tower in essentially non-turbulent fashion under the influence of gravity and of vapor velocity of the steam. Other gases evolved as dried particles began to decompose in the intense heat.

Dr. Gauvin patented the system and assigned the patents to the Institute. Subsequent experiments proved that, though the pulp and paper industry has not completely solved its own recovery problems, it had discovered a way to destroy the less complicated sanitary sewage sludges.

Settled sludge, at about 10% solids content, sprayed into the reactor, converts in seconds to a mixture of steam vapor, gases and dried solid particles. But instead of stopping the reaction and collecting these particles—a necessary operation to recover sulfur and other materials—the oxidation is allowed to proceed to completion. The result, according to PPRI reports, is destruction of all odor and bacteria, followed by the consumption of all combustible materials.

In this destruction of sewage sludge, the unit replaces digestion tanks, drying beds and dried-sludge disposal equipment, eliminating the attendant time-consuming problems, nuisance and handling costs. The entire operation is automatic with fail-safe controls.

The Beaconsfield plant represents a municipal benefit from almost $1,000,000 spent and more than eight years of AST study and development. One phase of this study started in July 1957, with construction of an out-of-doors pilot plant on one corner of the McGill University Campus. Technical feasibility was demonstrated before a large group of observers in September of that year. During those months the AST sludge disposal part of a sewage treatment plant was working intermittently on the campus, using sludge supplied by the RCAF base at St. Hubert, Que., some 15 miles away. The process was so odorless that the man in the street never suspected that sludge destruction was taking place.

As a result of this demonstration

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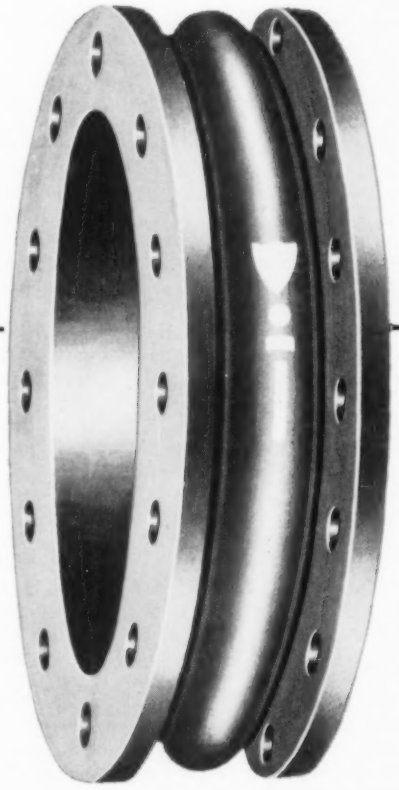

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the National Welding Co., Ltd., 8235 Mountain Sights Ave., Montreal, become interested in the AST application to sanitary engineering problems. In November 1957, at a special meeting of the Beaconsfield Town Council, approval was given for installation by National Welding of an AST sludge-disposal reactor to serve a new sewage treatment system being installed by the town. Under the approved contract, the firm agreed to provide and operate the AST plant and to await payment until it had been declared satisfactory both by the town and the provincial health authorities.

Mechanical and electrical "bugs" —inherent in any new plant demonstrating an entirely new procedure —were overcome by, and at the expense of, National Welding, and the unit was approved only after a thorough test under fairly continuous operation. Prior to town council approval, the AST Beaconsfield plant disposed of the required amount of sludge (only a portion of the reactor capacity) for more than two consecutive months, with only very minor difficulties.

The Beaconsfield plant is served by a conventional collection system with conventional primary settlement. Raw sewage solids are settled in the bottom of the primary settling tank, and the overflow is chlorinated and discharged to the river.

Innovations start with a smaller, similar settling tank, where the primary sludge is concentrated to a sludge of about 10% solids content. This is pumped to a storage tank inside the sludge handling building where it goes through a small grinder to chop up fibrous material. From here the sludge is pumped to the top of the AST reactor tower outside the building.

This type of reactor is an empty tower whose cylindrical wall is kept at a high temperature. When a slurry or solution is atomized into it, at about 150 psig, the moisture in droplets flashes into superheated steam. This becomes the carrier vapor as evaporating droplets move down the tower.

Part-way down, all moisture has been converted to steam and the solid particles are suspended in an essentially non-turbulent vapor of their own creation. As this suspension continues down the reactor, various kinds of physical and chemical reactions can be induced, one after another.

This is what happens in the AST reactor at Beaconsfield. Bacteria and odors are destroyed by the very high temperature (1,000°F to 1,400°F) and the solid organic sludge is burned in a few seconds to a harmless, inorganic ash. In the Beaconsfield plant, heat is provided by four banks of electrical heaters. Gas or oil heat can be substituted.

As the water in the atomized liquid-sludge spray flashes into superheated steam, solid particles are completely dried by the time they have fallen half-way down the tower. At this point, the air is introduced at low pressure from a compressor inside the building. The solid particles combine with the oxygen in the air and the dried organic material in them is burned.

Steam carrying the ash is condensed in a small jet condenser that is cooled by sprays of cold water from the overflow of the settling tank. This condensate, with its entrained ash, is then passed through a small vertical scrubber, is pumped to the main pumping station and on through the main plant outfall into the river. Nitrogen from the air

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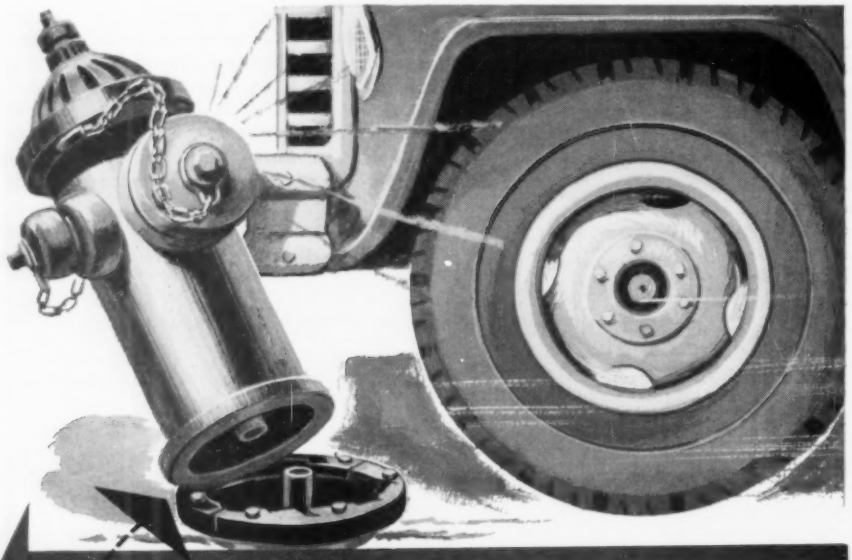

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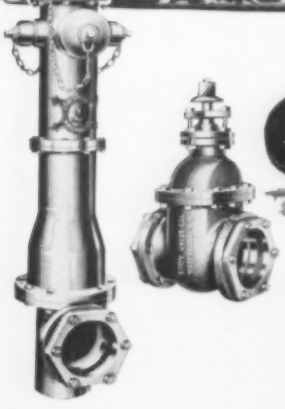

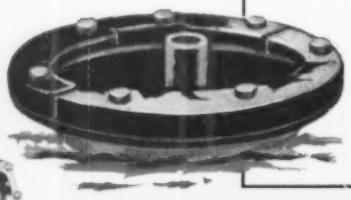

NO HARM TO HYDRANT...

As shown, the safety stem coupling shears off at the ground line. The break-flange gives way without damage to stand pipe or nozzle sections. With break-flange construction the hydrant is easily and economically replaced without digging or costly repairs.

EDDY VALVE COMPANY
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WATERFORD NEW YORK

introduced into the reactor and carbon dioxide produced from the burning of the organic material are vented to atmosphere through a short, small-diameter stack.

Thus, all products of the primary settled sludge (condensed and easily disposable purified water, harmless inorganic ash and odorless gases) have been dealt with.

The time required for the entire sequence of processing by AST is less than a minute, thanks to an empty stainless-steel tube having an internal diameter of only two feet and a height of 20 feet.

Reported Advantages

Advantages reported for both large and small cities are:

1. Great speed—about a minute of processing from primary raw settled sludge to harmless, inorganic, completely oxidized ash, as compared with weeks of bacterial digestion followed by drying and disposal.

2. Reduced land requirements—at least 30% less acreage required for a primary treatment plant.

3. No handling and disposal of dried solids.

4. Less depreciation of land values adjacent to the treatment plant as a result of nuisance or odor.

5. Automatic operation, with fail-safe controls. Conventional bacterial plants require frequent sampling and continuous supervision. AST may operate for weeks with only nominal supervision and only occasional spot sampling.

6 Low capital and operating costs —operation essentially at atmospheric pressure means low initial-construction costs. Automatic operation results in savings additional to those achieved through elimination of handling and disposal of dried solids.

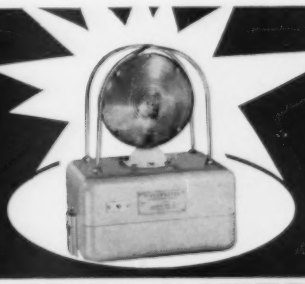
7. Easy, low-cost increases in plant capacity through installation of AST units in parallel as the community grows.

8. Elimination of mechanical filtration and incinerator equipment.

Larger communities may derive even greater benefits in lower capital costs as the direct result of low-pressure operation. Large-scale plants in water-deficient areas would provide an essentially clear condensate with very low BOD and COD.

Samples of water from Beaconsfield AST plant condensers, following complete oxidation of solids, were colorless, crystal clear and were classified as "potable" by the health authorities of the Providence of Quebec.

ROAD BLOCK LIGHTS



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VB Liquid Honing is proving itself in Milwaukee, Cincinnati, and in towns in New Jersey, Georgia, Florida. Get the whole time-saving, money-saving story on VB LIQUID HONING in meter cleaning — or send a meter for Free laboratory demonstration cleaning.

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POLICE PURSUITS FOR 1960

Family Relocation Can Succeed In Urban Renewal Work

The report of a four-year study of family relocation in 41 urban-renewal areas indicates that guidance programs pay off in direct proportion to services rendered

By H. W. REYNOLDS, Jr.*

City embarrassment and the problems that accompany removing and resettling families forced out of urban-improvement areas increase as slum clearance and renewal operations progress. This hardship for affected families — through no fault of their own—is often a source of bad press, city-wide resentment, and criticism of officials who are doing an operationally fine job combatting blight and furnishing desperately needed public housing.

The School of Public Administration of the University of Southern California, in an effort to find methods of relieving the strain on both the city and relocated families, has conducted a four-year survey of programs in 41 cities in the United States. The results of the study suggest that administrative methods, by their presence or absence, have a predominant effect on the satisfactory outcome of relocation efforts.

The first, and perhaps the most important, single conclusion of the study is that the cities themselves are too often to blame for resentment—and subsequent criticism—of groups and champions of groups among relocated families.

The survey reveals that of the cities studied, a solid majority of 26 follow displacement practices that invite such criticism:

- **They do not encourage a direct and sympathetic relationship between the relocator and those displaced.**
- **They fail to make a substantial effort to render resettlement assistance to those displaced.**
- **They do little more than take a census of displaceable families and advise them of the probable moving deadlines.**
- **They make no effort to locate suitable shelter for those displaced.**

Cities following these dubious practices recorded approximately 65% of all individual relocations. A majority of all families relocated in these poor-practice cities (85%) showed a preference for their old neighborhoods, even if the housing was of slum quality. Those who were forced to obtain their own off-site housing relocated within 12 city blocks of their old addresses. The result was an extension outward of the same problems that marked the original, blighted areas and caused their decline.

Of the 25,482 families displaced

* Mr. Reynolds was for several years assistant to the director of management, Philadelphia Housing Authority. He is presently Assistant Professor in the School of Public Administration of the University of Southern California.

CITIES PARTICIPATING IN RELOCATION SURVEY

Size of City	*Number of Cities*	*Families Relocated*	*% of Total*
1,000,000 or more*	4	24,475	51.0
500,000 to 999,000**	9	9,744	20.4
100,000 to 499,999***	28	13,063	28.6

*New York, Chicago, Philadelphia, Detroit.
**St. Louis, Baltimore, Minneapolis, Washington, D. C., Pittsburgh, Boston, Milwaukee, Buffalo, San Francisco.
***Cincinnati, New Orleans, Birmingham, Denver, Duluth, Jersey City, Kansas City, Little Rock, New Haven, Norfolk, Providence, Sacramento, St. Paul, Trenton, Worcester, Cambridge, Chattanooga, Gary, Columbus, Hartford, Indianapolis, Memphis, Oakland, Paterson, Richmond, Scranton, Somerville, Syracuse.
(Note: 56.5% of all families were non-white).

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Water District Supt. Elwood Smith (left) of Seekonk, Mass. and Chief of Police Charles Gordan of Breckenridge Hills, Missouri both find they must leave the radio on standby when away from their vehicles. General Electric TPL makes this possible without idling the engine or running down the battery.

GENERAL ELECTRIC

in these cities, 18.7% were found eligible for public housing available to them. Yet less than half of these chose to enter this type of accommodation.

Newspaper and realtor lists became the primary resource for relocatees seeking new shelter, but only 10% to 20% of up-rooted families could find—mainly by their own efforts—decent housing which was near the site areas in which they had lived.

Only about 5% of all those displaced chose off-site housing definitely removed from their site locations (defined as further away than a mile and a half, or 12 city blocks).

About 80% of the relocated families were forced to pay higher rents in their new dwellings. Increases ranged from 12.2% (average rental boost) among 271 two-person families to 6.5% more for 134 five-person families.

Planned Relocation a Must

In encouraging contrast, 15 of the 41 cities studied have, through planning, supervision and aid, directed displaced families to more acceptable surroundings.

Intensive counseling, the first tool of enlightened administrative practices, has effectively served families in 11 of these cities. For eight of them (Chicago, Philadelphia, St. Louis, Baltimore, Washington, D. C., Milwaukee, New Haven, Conn., and Paterson, N. J.) such counseling has:

1. Involved use of full-time, professionally trained social workers who were specially competent at interviewing low-income, minority-status families.

2. Supplemented these staffs with additional professionally trained personnel as workloads dictated.

3. Compiled detailed case histories for each displaced family. The histories took into account all factors pertaining to the well-being of the families. These factors included the number of persons, the income, and the social and psychological elements hindering or facilitating a displaced person's susceptibility to resettlement guidance.

Group Meetings

Frequent informal group meetings of those displaced enabled them to question relocating officials and receive responsible answers. Support from political, church, and neighborhood associations was sought through continuous release of information describing details of every site clearance and its need in the community.

Assistance programs were established in site areas and itemized lists of vacant dwelling units were circulated among the displaced families. At times the testimony of persons not connected with the relocators—merchants, clergymen, and social workers in whom families had confidence — encouraged them to accept the relocators' recommendations.

Through these services, relocating authorities in the first group developed opportunities to advise relocatees carefully about merits of particular off-site housing that they had considered moving into.

The second practice studied was actually an extension of the first. The relocating agency took an active part in procuring shelter that was adequate for the individual needs of each family. Staff members inspected dwelling units listed with newspapers and realtors prior to publication. The staff members tried to eliminate duplicate or unsafe addresses. They also supplemented

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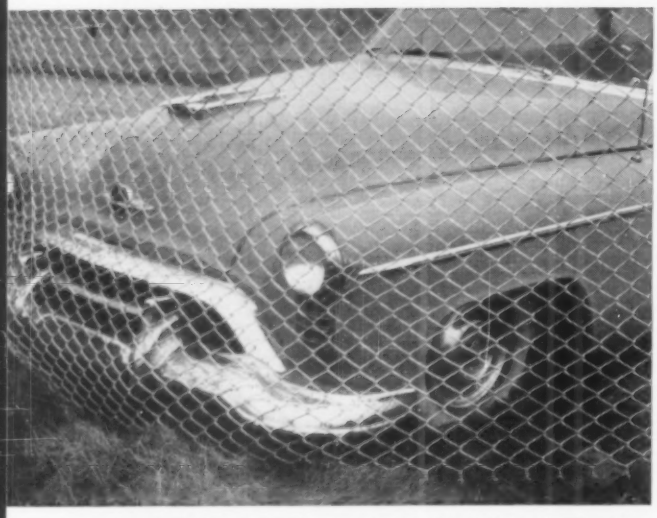
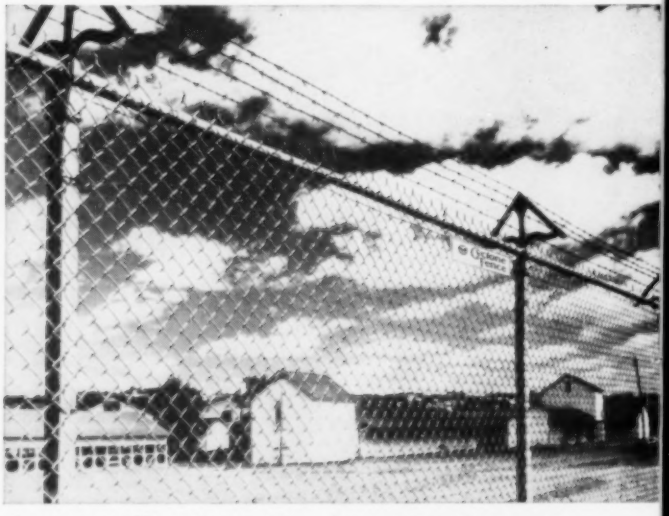


Impact Test. A 4000-pound car, traveling at 35 miles per hour, was driven directly into a panel of Cyclone Chain Link Fence Fabric. The car was stopped. The fence did not break or fail—proof that Cyclone Steel Fence has the strength to withstand severe impact.

Fire Test. This raging fire was deliberately set to test the heat resistance of Cyclone Steel Fence . . . and that rugged steel fabric did not melt or fail. Should a grass or trash fire break out too close to a Cyclone Fence, there will be no damage.

Corrosion Test. More than 10 years ago this panel of Cyclone Steel Fence was installed 45 feet from the ocean. Even in this extremely corrosive atmosphere it is still strong and serviceable. Cyclone Fence owes its unusual corrosion resistance to its heavy coating of zinc.



Time Test. The fence shown here is a 25-year-old Cyclone veteran . . . still giving good service. Once Cyclone Fence is properly installed, it requires almost no maintenance. It continues to give good service, year after year.

For additional information on USS Cyclone Fence, write to Cyclone Fence, American Steel & Wire, Dept. B-40, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

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these contacts with fraternal, religious, trade union, and political associations.

In addition, rehousing offices maintained on or near each site disbursed information and guidance to relocatees.

The third practice went even further. Four municipalities rendered a pre-entry inspection service for displaced families. Every off-site dwelling selected by a relocating family, regardless of whether the relocator had suggested this address, was scrupulously checked to assure those displaced — before possible occupancy—that the quality of their prospective new dwelling was not substandard.

Well Worth the Effort

Greatly improved community relations and increased public confidence have accompanied the tangible results of these guidance procedures. Of 16,540 families relocated in these 15 municipalities, only 34% chose to relocate to non-recommended — and generally substandard—dwellings. This contrasts with 85% in poor-practice cities.

Eight of nine communities with relocation programs spanning two or more calendar years (1955-1958) reported that the proportion of relocated households that elected to follow recommendations of guidance personnel steadily increased. In Philadelphia, for example, only 40% of 1,122 families dislodged through redevelopment activities chose to heed this kind of counseling in 1955. In 1956, the ratio rose to 51% of 1,324 families and in 1957 and 1958 the proportions went up to 58% and 60%, respectively.

In New Haven, Conn., the ratios were 63% of 424 families in 1956 and 72% of 347 families in 1957.

Only about one-fourth of all displaced families in these 15 municipalities settled close to their former addresses (within 12 blocks), and most of these moved to substandard dwellings. As in those cities that did not assist relocatees to find off-site housing, barely 20% of necessary adequate shelter in guidance cities lay adjacent to vacated site areas. The larger proportion of displaced families entering satisfactory off-site shelters—about 45% of all households relocated in the 15 communities — resettled some distance away from their former sites.

In addition, city-aided families paid lower rent increases and now have better housing than their self-relocated counterparts. Clearly the counseling - advisory service has been well worth the effort.

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This low-maintenance Fitchburg Chipper is disposing of brush in the City of Holland, Michigan.

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The Fitchburg Chipper is engineered to work fast, safely, and to be always "ready to go." It's the chipper which won't slow down your crews, lets you plan their work intelligently—saves you time and money.

Please send in the coupon for more information, and for copies of articles on chipping which appeared recently in leading publications. These feature articles describe five methods of brush disposal and ten new ways to utilize "by-product" chips. Send for your copies, they are well worthwhile.

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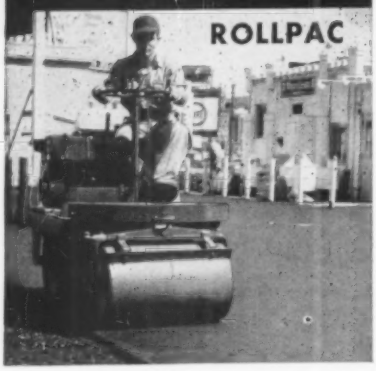

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Ten Years of Sunnyvale's Combined Police and Fire

By J. A. JESSUP, Chief
Dept. of Public Safety

The City of Sunnyvale, Calif., population 55,000, looking to taxes as well as safety, combined its police and fire services into a single Department of Public Safety. The combined department began operations on July 1, 1950.

Necessities for the successful operation of the combined department are the attitudes, adaptability, and training of personnel, and a firm belief on the part of the administrator in the practicability of the unification.

Prior to 1950, the police department consisted of 16 employees and the fire department had a paid chief and 30 volunteers. Upon unification, the Chief of Police and the Fire Chief were appointed to the rank of Public Safety Captain. The volunteer fire organization was disbanded. Present number of department personnel is 85, with ranks and pay scale as follows:

1 Assistant Chief, $660; 676; 727; 763; 801
2 Division Commanders, $613; 644; 676; 710; 745
5 Captains, $556; 584; 613; 644; 676
8 Lieutenants, $505; 530; 556; 584; 613
58 Public Safety Officers, $458; 481; 505; 530; 556
1 Senior Communication Officer, $458; 481; 505; 530; 556
7 Communication Officers, $415; 436; 458; 481; 505
2 Clerk-Stenographers, $302; 317; 333; 349; 367
1 Poundman, $358; 376; 395; 415; 436

With satisfactory performance an individual may reach the top of the scale in 3½ years. Personnel are granted ten working days vacation, accumulate ten days sick leave and nine holidays annually, and after five years of service are given 15 days vacation.

Three Divisions

Division Commander Riemer is in charge of the Fire Division, one of the three divisions in the department. A Lieutenant is on duty at each fire station on a 24-hour tour. A relief crew, under a Captain, relieves station personnel who undertake all those duties peculiar to fire stations. In addition to regular fire station duties the men do all the fingerprinting required, register bicycle licenses, and occasionally assist in the office.

The Patrol Division is under Division Commander Penfold. A Captain is in charge of each shift. Senior Communication Officer Kannegaard supervises seven communication officers and two clerk-stenographers who receive and record all police and fire calls, dispatch officers and equipment, book prisoners, register voters, prepare the reports and records, keep crime, traffic and fire statistics, and perform other general duties incidental to the operation of the Headquarters Office.

During emergency response of fire equipment, officers assigned to traffic or patrol work expedite equipment through traffic. Almost without exception, patrol officers arrive at the fire scene ahead of fire equipment, give directions, assist in laying hose, aid in hooking up hydrants and do active fire-fighting.

Opponents of unification have insisted that it is beyond the capabilities of an individual to prepare himself to do a job in both police and fire fields. Agreement with this thinking would seriously undermine an individual's potential. Officers in the department have not experienced any difficulty in performing public safety service. In fact, public safety provides the maximum of job satisfaction to the men: an individual's capabilities are utilized; job boredom avoided; promotion opportunities are increased; there are the advantages of job importance and higher pay.

We are often asked, "What would you do if you had a fire and a police incident occurring simultaneously " As in any emergency, the most attention would be given to the most hazardous situation. The Public Safety Department is in a better position to handle these peak loads than are separate departments. Here's how we operate in an actual fire emergency:

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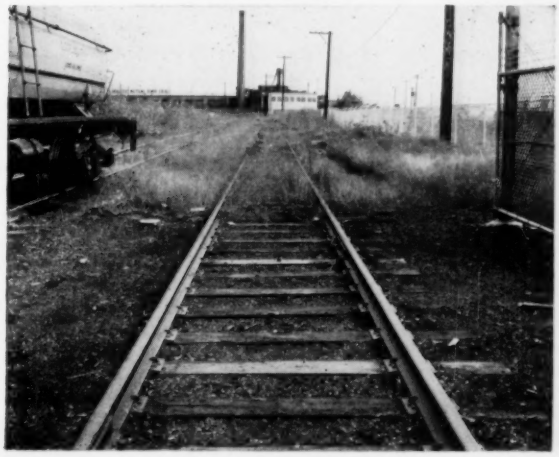

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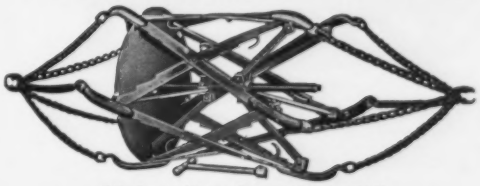

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Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

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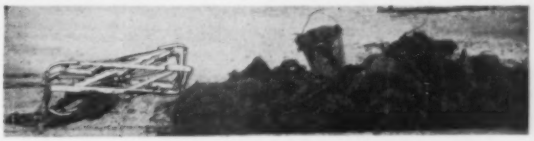

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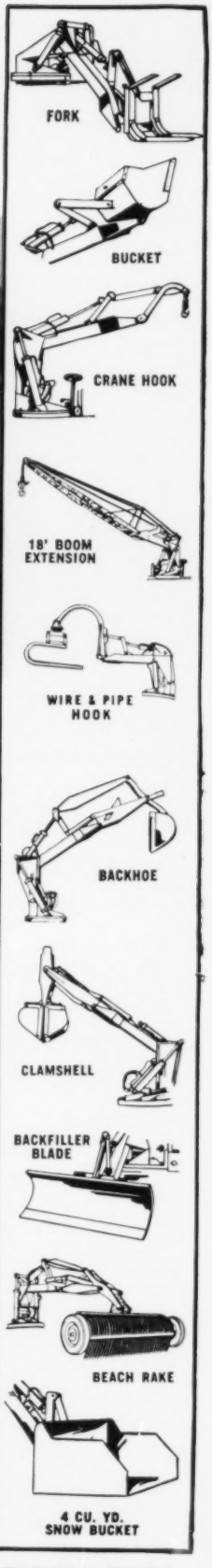
Because of its 180° swinging boom, the Speed Swing is not forced to maneuver back, forth, and all around constantly when loading. It SWINGS THE LOAD instead! This means far *fewer* machine movements and *faster* work cycles . . . with *greater safety* to other workmen, other equipment, and to moving traffic on streets or highways.

The long boom reach prevents bumping trucks when loading from side or rear. Other type equipment cannot provide this high safety factor. Also, the longer wheelbase, wider tread, and low center of gravity mean more stability and greater safety in moving heavy loads.

And there's *full* operator visibility for any one of the 10 *quickly-interchangeable* attachments shown at right, at all times during use. To top it off, you make the *safest investment of all* when you choose the Pettibone 180° Speed Swing . . . the most outstanding all-purpose material handler for ALL YOUR JOBS!

Find out all about it today. Get all the facts on how to safeguard your profits, your working crews, your investment in equipment—and be SAFE ALL AROUND! Write to—



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In summing up the operation of the Department of Public Safety, in 1958, the former Sunnyvale City Manager, H. K. Hunter, said: "During the time of our operation, we have received requests for information from well over 200 cities in this country, and from Hawaii and Canada. After eight years of operation we are more convinced than ever that the goals aimed for in the unification of the department are being achieved today."

The 1958-1959 fiscal year budget for the Public Safety Department was $560,862, one-third of the city budget, distributed as follows:

Salaries—	**$448,160**	**79%**
Other Expenses—	**73,154**	**14%**
Capital Outlay—	**39,548**	**7%**

On the personal services budget during the period 1951-52 to 1958-59 approximately $268,384 has been saved.

In 1958, Sunnyvale's officer strength per thousand was 1.6 compared to the national average of 3.17 for cities in our population group, yet our performance level remained relatively high as indicated by the following features:

1. That an "outstanding achievement certificate" was awarded to the department for traffic supervision by the International Association of Chiefs of Police, and a special citation was awarded for "pedestrian safety" by the American Automobile Association.

2. That the crime rate was below the national crime rate by 25% and below the California crime rate by 5%.

3. That the city has 68% fewer building fires than the average American city of similar size as illustrated by the National Board of Fire Underwriter's report.

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Passengers riding "Operation Northeast" on the Fox Chase line of the Reading Railroad during October—its first full month of operation—totalled 30,696 compared with 10,325 in October 1958, according to City Solicitor David Berger of Philadelphia, Pa.

"I am particularly gratified," said Mr. Berger, "that a substantial increase in revenue went along with the 300% increase in number of passengers." Reading figures show total monthly revenue of $9,000, of which some $1,700 is credited to the city under terms of the "Operation Northeast" agreement.

"Operation Northwest" has attracted nearly 412,000 additional riders since its inception in October 1958. It offers 30-cent rail rides to the center of the city, more trains, and 10-cent transfers to and from PTC buses.

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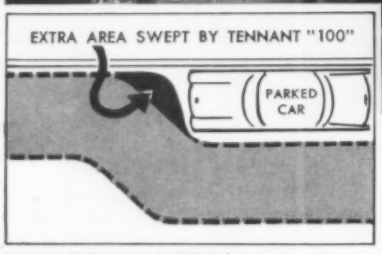

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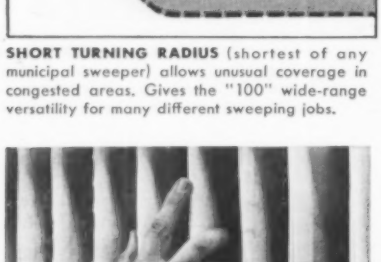

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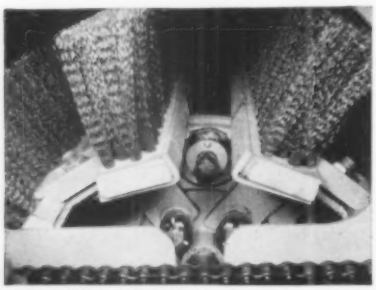

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ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

Parking Lot in Business District—Standards for Special Permits

NEW JERSEY. *State of New Jersey* v. *Kressler*, 142 Atlantic (2d) 257 (Bergen County (lower) Court, May 28, 1958).

In this case, the local zoning regulations for business districts permitted certain local retail establishments, and provided further that a garage, a parking lot or a filling station could be permitted if approved by the Mayor and Council, after a report from the Planning Board. In a separate section, the zoning ordinance stated that

> "The objective of (these) discretionary provisions is to enable the Borough Officials to preserve the general character of a neighborhood by permitting the location of certain uses specified herein, in such a way that any adverse effects on adjacent properties will be minimized, or for requiring necessary facilities such as motor vehicle parking and special sewage disposal."

This case involved the use of a vacant lot for the storage of various items of heavy construction equipment. In the opinion the Court held that the existing use constituted a parking lot. However, it was pointed out that no standards were set forth to guide the discretion of the authorities in granting or refusing a permit for such a use, and that therefore the quoted provisions were invalid.

Special Permits by Planning Commission—Need of Statutory Authorization

NEW JERSEY. *Swimming River Golf & Country Club* v. *Borough of New Shrewsbury*, 152 Atlantic (2d) 135 (Supreme (highest) Court, June 17, 1959).

In this case the zoning ordinance was amended to require a minimum lot area of 40,000 square feet, with 200 feet of frontage in the first residence district; and the ordinance further provided that the local planning board could approve lots, in connection with sub-division control, smaller than the stated minimum, and could interpret any potentially ambiguous district boundary. The provisions were challenged by a developer on the ground that the provision for variance of the lot size requirements by the planning commission was invalid, and that this invalidated the entire amendment because the entire scheme of lot size regulations was so integrated as to be inseparable.

In the opinion, the Court (adopting the opinion of the lower court) held that the provisions delegating to the planning board the power to grant exceptions to the lot size requirements were invalid in New Jersey, since

> ". . . the board of adjustment is the only agency empowered to hear and decide requests for special exceptions in accordance with standards specified in a municipal zoning ordinance, as this matter is committed by state statute to that board and the municipality may not deviate from the framework.
>
> "After providing minimum width and area requirements for Residence Zones One and Two, paragraphs (2) of sections 3 and 5 of the amendment then delegate to the planning board the power to grant exceptions to those requirements in accordance with the schedules contained therein. The exceptions contemplated would allow dwellings to be erected on lots that do not meet the minimum requirements. The ordinance provides standards to guide the planning board in granting or denying of the exception, namely, the schedule provided. This delegation of power to the planning board is beyond the authority delegated to municipalities

(Continued on page 195)

control

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In small amounts, Triangle Brand Copper Sulfate controls algae growth and kills some of the more troublesome aquatic weeds. They disintegrate where they are, which prevents downstream infestation or clogged waterways.

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Two informational booklets, "The Use of Copper Sulfate in the Control of Microscopic Organisms," and "Copper Sulfate for Root and Fungus Control in Sanitary Sewers and Storm Drains," available on request.

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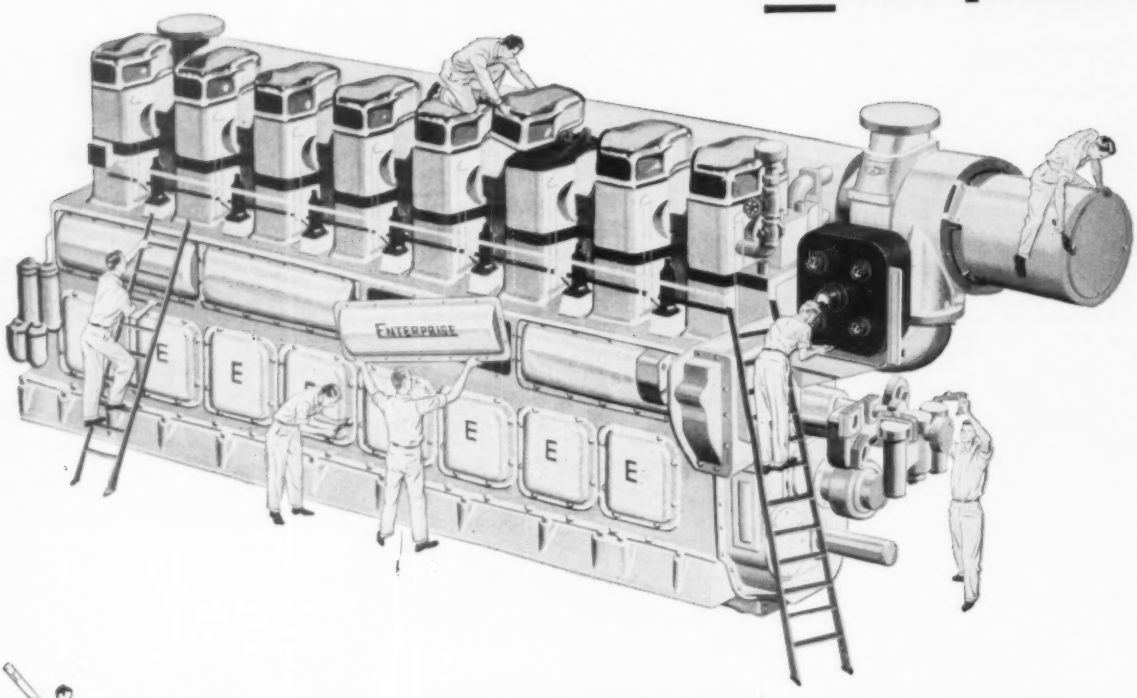

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No bulky shrouds or surplus covers to remove before getting to engine.
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You'll find that ENTERPRISE accessibility saves time, money and manpower in maintenance and overhaul

Ever watch precious hours slip by trying to find a way to dismantle, inspect or replace an engine part or assembly? Such unnecessary and costly down-time is something you don't have to worry about with modern, "easy-access" ENTERPRISE Diesels. For ENTERPRISE service-wise engineers have designed every model in the entire 73 to 2284 HP line for maximum accessibility and easy, low-cost servicing. That's why we say – and mean – you'll have less down-time if it's powered by an ENTERPRISE Dependable Diesel!

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(Continued from page 193)

by our state zoning and planning statutes. Nowhere in N.J.S.A. 40:55-1.1 and the subsequent sections is the planning board empowered to decide questions of exception to the zoning ordinance. On the contrary, N.J.S.A. 40:55-39 (b) specifically delegates this function to the board of adjustment. '"Special exceptions" in New Jersey, as specifically provided for in our zoning law (R.S. 40:55-39(b), as amended) under which the board of adjustment is the only agency empowered to hear and decide requests for same "in accordance with the provisions of any such ordinance," i.e., on the basis of standards specified therein.' Saddle River Country Day School v. Saddle River, supra.

"It is the opinion of this court that paragraphs (2) of sections 3 and 5 of the amendment to the zoning ordinance of the Borough of New Shrewsbury, adopted June 6, 1957, are invalid, and in light of this decision the court does not have to pass and does not pass on the validity of the exception provision of this amendment had it been delegated to the proper agency or the sufficiency of the standards provided for the administrative decision."

The same holding was made on the grant of power to the planning board to interpret the zoning maps. However, these provisions were held to be separable, so that the basic requirements were upheld.

Architectural Control

NEW JERSEY. *Hankins* v. *Borough of Rockleigh*, 150 Atlantic (2d) 63 (Superior (lower) Court, April 3, 1959).

In this case a small borough in Bergen County, with a population of about 150 people and a long record of resistance to development of all kinds, passed a zoning regulation requiring that the architectural design of new buildings should be approved by the Planning Board and the Mayor and Council—adding, incidentally, that

"Such design may be of early American, or of other architectural style conforming with the existing residential architecture and with the rural surroundings in the borough, and acceptable to the Planning Board and to the Mayor and Council of the Borough of Rockleigh."

A subsequent provision also flatly prohibited flat roofs.

In the opinion the Court recognized the trend in modern decisions—especially in New Jersey—to give considerable weight to aesthetic considerations in zoning; but it was held that this was a wholly unsuitable area in which to enforce such restrictions of this type. It was pointed out that a gas station, an industrial building, and a delicatessen were located within a short distance from the lot involved. Moreover, about 20% of the 60-odd buildings in the borough were modern, and about half the remainder had additions with flat roofs. The Court therefore found it unnecessary to pass on the major substantive questions argued—whether aesthetic considerations were sufficient to uphold such a zoning regulation, and whether the standards set forth were sufficient.

Send a CUSHMAN 780 TRUCKSTER® instead of a truck!

Kansas City Housing Authority does . . . and cuts costs!

"We operate six Cushman 780 Trucksters," reports Francis E. McCall, general manager of the Kansas City, Mo., Housing Authority, "and find them much more economical than conventional pick-ups, while offering many other advantages."

In use at five projects, the Trucksters haul almost everything, including heavy, bulky furniture and appliances. The fact that they can be backed right up to an apartment door is particularly advantageous.

Operating and maintenance costs for the Trucksters are extremely low, Mr. McCall reports.

Powered by the dependable Cushman Husky 4-cycle engine, a 780 Truckster hauls an 800 pound payload for less than a penny per mile. Ruggedly built, it features: • New formed channel, automotive style chassis • Bigger, stronger pick-up box • Constant mesh transmission • Hydraulic internal expanding brakes • Optional fiber glass and steel cab with wrap-around windshield • Choice of body styles to fit the job.

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CM UTILITY VEHICLES **CUSHMAN MOTORS**

945 No. 21st, Lincoln, Nebraska

A subsidiary of Outboard Marine Corporation, maker of Johnson and Evinrude outboard motors

Please send information on

☐ 780 Truckster

NAME _____

(ATTACH TO YOUR LETTERHEAD)

900 feet installed in under 3 hours

with time out for lunch!

As fast as trenching machines will operate . . . that's how fast it is to install AMERICAN FASTITE® Joint pipe! Numerous case histories verify this. For example, on a Southern suburban water supply system recently, 900 feet of 6-inch AMERICAN FASTITE® Enamelined pipe in 16-foot lengths was installed in under 3 hours . . . including time out for lunch. The entire operation required a minimum of labor and equipment and resulted in maximum installation economies.

The secret of this speed is in the simple 3-step assembly: (1) Insert gasket; (2) Lubricate spigot; (3) Push pipe together . . . . and you have a permanent, bottle-tight installation!

Your nearby American Cast Iron Pipe Company representative will prove why AMERICAN FASTITE® is the right joint pipe for your next job. Call him now.

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Fastite® **JOINT**
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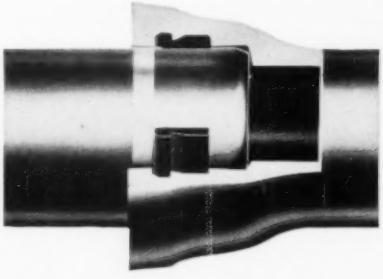

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Denver • Pittsburgh
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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

City Attorneys—Payment Of Fee By Property Owners Valid

Where town board authorized town attorney to appeal from adverse decision in zoning case and all expenses of appeal were paid by property owners, held there is no public policy which precludes town from accepting reimbursement or accepting services of attorney rendered without obligation on part of town. *Franciscan Missionaries of Mary* v. *Herdman*, 184 N.Y.S. 2d 105 (N. Y. Sup. Ct., App. Div., March 2, 1959)

Contract Not Approved By Proper Authority— City Not Liable

In action to recover for services rendered in removing tree stumps where city employees with whom plaintiff dealt had no authority to create liability, held city not liable on quantum meruit basis. *Lutzken* v. *City of Rochester*, 184 N.Y.S.2d 483 (N.Y. Sup. Ct., App. Div., April 8, 1959)

Contracts—Village Granted Free Sewage Disposal

Where contract gave village right to discharge its sanitary sewage into city sewer extending into village without cost to village, held contract meant without cost to inhabitants, including industries of such village. *Village of Cuyahoga Heights* v. *City of Cleveland*, 157 N.E.2d 145 (Ohio App., March 20, 1959)

Dedication— City Not Compelled to Accept

Where owner of land at end of street dedicated but never developed as public roadway wished to improve street and connect with easement over his own lands for benefit of subdivision outside city, held permission granted but city not required to accept easement across land at end of street as public way. *City of Indian Hills* v. *Indian Hills Co.*, 325 S.W.2d 321 (Ky., June 19, 1959)

Licenses— Loud Noises From Night Club— Revocation Upheld

Where evidence showed that liquor was found in licensee's hand in dry county and night club was objectionable to neighbors because of loud music played until very late hours and other general boisterous disturbances, held license revoked. *O'Bar* v. *Town of Rainbow City*, 112 So.2d 790 (Ala., May 28, 1959)

Obscenity—Ordinance Limiting Film to Adults Invalid

In action relating to ordinance authorizing limited exhibition of movie to persons over 21 where picture tends to create harmful impression on children where such tendency as to adults would not exist if shown only to persons over mature age, held ordinance invalid. *Paramount Film Distributing Corp.* v. *City of Chicago*, 172 F. Supp. 69 (D. Ill., March 24, 1959)

Sidewalks— Abutter Not Liable For Boy's Bicycle Injury

In action for injury to boy whose bicycle skidded on accumulation of mud on sidewalk, held abutter not liable. *Kunz* v. *City of Wauwatosa*, 95 N.W.2d 760 (Wis., April 7, 1959)

Streets— Closing Depriving Owner of Access

In proceeding on claim for loss of suitable means of access to landowner's lot, held closing of street deprived landowner of access and damages awarded. *Corbisello* v. *State*, 185 N.Y.S.2d 346 (N. Y. Ct. Cl., April 28, 1959)

Streets— Encroachment Ordered Removed

In action to compel landowners to remove dwelling from public street, held city cannot be divested of title to street held in trust for public use by adverse possession. *City of Jamestown* v. *Miemietz*, 95 N.W.2d 897 (N.D., April 6, 1959)

Tort Liability— Operation of Dump Proprietary

In suit to recover damages from city for operation of dump as nuisance, held city liable for special damages since operation of pump is private function. *City of West Point* v. *Meadows*, 110 So.2d 372 (Miss., April 6, 1959).

HERE is the answer to

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Lightweight, Easily-Adaptable

SAFE-T-CONE TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

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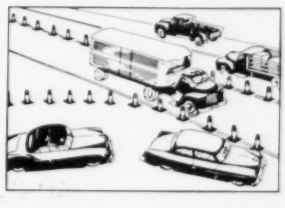

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*Poly-Vinyl Chloride

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TARCO *"Litter-Getters"*

Vacuum-type LEAF and Litter Collectors

These are powerful vacuum-type machines designed for **rapid collection** of **Leaves** or **Litter** such as: newspapers, paper cups and wrappings, tin cans, pop bottles, ticket stubs, etc. Discharge material into truck mounted box.

All Tarco "Litter-Getters" are equipped with large, popular, **air-cooled, electric starting engine;** heavy reinforced and perfectly **balanced steel suction impeller;** replaceable **stainless steel liners** for suction housing and exhaust duct. Model L. G., **Straight Trailer Mounting,** shown here is **quickly changed from right to left side pickup.**

Several Other Models. Model L. G., **Cross Trailer Mounting,** is equipped with wide semi-rigid suction snout for windrow collection of leaves. Model L. G., **Skid Mounting,** is designed for mounting on a dump truck body or stake body ahead of the receiving box.

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NEW!

for subsurface drainage...

TRANSITE UNDERDRAIN PIPE

- **Extremely good weight-strength ratio**
- **Naturally smooth interior**
- **Resists corrosion**
- **Assures low frictional resistance to flow**
- **Excellent alignment, tight joints, low material cost for new installation economies**

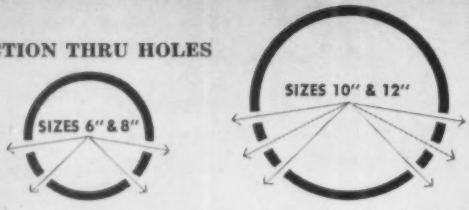
For highways, airports, dams, industrial plant sites—anywhere there's a subsurface drainage job to be done—Johns-Manville Transite® Underdrain Pipe does it effectively and economically.

The plastic coupling used with Transite Underdrain Pipe assures a permanently tight, *flexible* joint . . . keeps out waterborne silt and maintains permanent pipe alignment. And, because of Transite's long (10 ft. and 13 ft.) lengths, fewer joints are needed in the line.

Made of tough, durable asbestos and cement, Transite Underdrain Pipe won't rust. Its interior is made smooth to stay smooth, assisting the flow of water and reducing the opportunity for solids to find a resting place in the line. As a result, the perforations are able to perform their function of permitting entry of ground water into the line , at a maximum rate, where it can be quickly carried off.

Transite's low material cost, installation and maintenance economies mean important savings from the time it is specified until there is no longer a need for the line. Let us send you, without obligation, our book TR-246A. Write Johns-Manville, Box 14 (AC-4), New York 16, N. Y.

SECTION THRU HOLES



The minimum crushing strengths* of Transite Underdrain Pipe for subsurface drainage systems are shown in the following table:

PIPE SIZE (inches)	TOTAL APPLIED LOAD PER LINEAL FT. (pounds)	PIPE LENGTH (feet)
6	1,000	10
8	1,000	10
10	1,100	13
12	1,200	13

*A.S.T.M. 3-edge bearing method
A complete line of fittings is available including elbows, tees, wyes, crosses, end caps and increasers.

JM PRODUCTS

JOHNS-MANVILLE

RECENT CITY MANAGER APPOINTMENTS

B. Max Paulling
Camden, S. C.

Robt. H. McGregor
Painesville, Ohio

William Donaldson
Montclair, Calif.

Archie D. Sanborn
Bucksport, Me.

Paul F. Smith
Plainville, Conn.

V. A. Basgall
Emporia, Kan.

VIRGIL A. BASGALL, manager of Junction City, Kan., for the past nine years, has been recently appointed manager of Emporia, Kan., succeeding R. W. Cunningham. Mr. Basgall was previously manager of Hays, Kan.

CHRIS E. CHERCHES, administrative assistant of Glencoe, Ill., has been appointed as the new manager of Holton, Kan., succeeding Gorton Jim Boyd, newly appointed manager of Augusta, Kan.

GILBERT C. COSDEN is the new manager of Milford, Del., succeeding Roy E. Pettyjohn.

BAZEL E. CROWE, formerly manager of Largo, Fla., was recently appointed manager of Key West, Fla., succeeding Dave King. Mr. Crowe has also served as staff member of the Public Administration Service.

WILLIAM V. DONALDSON, administrative assistant of Beverly Hills, Calif., has been appointed the new administrative officer for the City of Montclair, Calif. Mr. Donaldson has also served as superintendent and acting personnel manager for the Denver Water Board.

DOUGLAS J. FLAUTT, manager of Sanger, Calif., for five years, has been appointed manager of San Anselmo, Calif. Mr. Flautt has also served as manager of Montrose, Colo.

EDWARD FRANK, manager of Petaluma, Calif., for the past eight years, has been appointed manager of Daly City, Calif., succeeding George Watts. Mr. Frank formerly served as city administrator of Turlock, Calif.

HARRY H. HOUCK, assistant manager of Oak Ridge, Tenn., has been appointed the first manager of Swartz Creek, Mich. Mr. Houck served as manager of Cordova, Alaska.

ANGUS T. JOHNSON, formerly manager of Elmira, N. Y., is the new manager of Norwich, Conn., succeeding Jay M. Etlinger, who resigned. Mr. Johnson has also served as manager of Middletown Township, Pa.

EARL H. JOURDAN, borough manager of Monaca, Pa., for the past two years, was recently appointed manager of McCandless Township, Pa., succeeding S. V. Erdelyi, now assistant manager of Buena Park, Calif.

JOE M. LACY, for the past four years assistant manager of Englewood, Colo., has been appointed manager of Grand Junction, Colo., succeeding Robert E. Cheever.

JOHN A. MACKAY has been named manager of Beaconsfield, Quebec, succeeding Thomas Plunkett, who resigned.

ROBERT H. MCGREGOR, manager at Hanover, Pa., for the past two years, was recently appointed manager of Painesville, Ohio, succeeding Fred E. Weisbrod, now manager at Oak Ridge, Tenn. Mr. McGregor has also served as manager at Dormont and Whitehall, Pa.

GEORGE C. MERKEL, manager of Grinnell, Iowa, for nearly three years, is the new borough manager of Middletown, Pa., succeeding Ernest G. Tomlinson.

DAN MIZE, formerly manager of McLean, Tex., was recently appointed manager of Mexia, Tex., succeeding Howard F. Mace.

EUGENE T. MORRIS, formerly manager of Davidson County, N. C., has been appointed manager of Lexington, N. C., succeeding George H. Aull, now manager of Durham, N. C.

KENNETH D. MORRISON, formerly assistant city engineer for the City of Buena Park, Calif., has been appointed manager of that city, succeeding Philip W. Storm, now chief administrator at Cupertino, Calif.

B. MAX PAULLING, has been recently appointed as the new manager of Camden, S. C., succeeding Max Holland, now manager at Kinston, N. C.

ARCHIE D. SANBORN, manager of Waldoboro, Me., was recently appointed manager of Bucksport, Me., succeeding the late L. W. O'Connor. Mr. Sanborn previously served as manager of Greenville, Me.

FRANK R. SMILEY, assistant to the manager of Oak Park, Ill., was recently appointed manager of Springfield, Ore., succeeding E. Robert Turner, now manager of Boulder, Colo. Mr. Smiley has also served as assistant to the manager and chief engineer of Wilmington, Del.

PAUL F. SMITH, administrative assistant of Windsor, Conn., was recently named the first manager of Plainville, Conn.

E. EARL UDALL, manager of Provo, Utah, for the past four years, has been appointed manager of Merced, Calif., succeeding Russell J. Cooney, now deputy director of the California Department of Public Works. Mr. Udall has also served as manager of El Segundo, Calif., for two years and as purchasing agent of Phoenix, Ariz., for four years.

HAROLD B. VASEY, for the past five years manager of Mankato, Minn., has been appointed manager of Winslow, Ariz., succeeding A. Perrott-White, who resigned. Mr. Vasey has also served as manager of Montrose, Colo., Brookfield, Mo., and Carlisle, Pa.

GEORGE L. YOUNG, formerly manager of Cavendish, Vt., has been appointed manager of Northfield, Vt., succeeding John Wolfenden. Mr. Young was previously manager of South Berwick, Me.

JOHN L. YOUNG, administrative assistant of Fort Pierce, Fla., is the new manager of Safety Harbor, Fla., succeeding Charles H. Tucker. Mr. Young was formerly employed by the Housing and Home Finance Agency, Atlanta, Ga.

ORIN F. NOLTING
Executive Director
International City Managers' Association

Lakewood Produces Community Film

Lakewood, Calif., has produced a half-hour documentary film in color, with narration and music track, for public information use.

The film deals with the historic origin of the community and gives a brief summary of the events which led to the incorporation of the city in 1954 when it became the nation's first city to contract with a county government for municipal services. It includes a summary of the services and describes the park and recreation program, police and fire protection, the work of the City Council and executive officers of the administration.

Prints of the film are distributed for free showing to interested groups. It is also used for public service television.

What Limited Slip Differentials Mean To The Sheriff of Duval County

For emergency vehicles that can't *afford* to be stuck —police and fire department cars, service cars and light utility trucks—you just can't beat the rugged, all-weather dependability of a limited slip differential.

Read this excerpt from a letter received by Dana Corporation from the Sheriff of Duval County, Florida:

". . . our cars patrol the rural area of Duval County as well as the paved roads, and it would be impossible to travel in some of these areas with conventional rear ends. Our patrols are constantly driving in sand and mud, as well as in woods where there are no roads at all—just paths—and we feel that without the limited slip differential this would be impossible.

"We have limited slip differentials on the 1959 Chevrolets in use in our Traffic Department and we are very satisfied with their operation.

"We lease the cars each year, on a competitive basis. Our specifications for the last two years, and for the coming year, have included a limited slip differential."

(*Signed*) Dale Carson, Sheriff
of Duval County, Florida

Make sure the next cars or light trucks you buy are factory-equipped with limited slip differentials, the differentials that shift power instantly to the rear wheel with the greater traction!

WRITE Dana for free booklet describing the benefits of this positive traction differential—and how it can help you.

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Many of these products are manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario

CONVENTIONS – WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

April 12-15—Los Angeles, Calif.

AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION. Annual Meeting (University of Southern California). Exec. Dir., Robert J. M. Matteson, 6042 Kimbark Ave., Chicago 37, Ill.

April 18-21—Lafayette, Ind.

PURDUE ROAD SCHOOL. Annual Session (Memorial Center, Purdue Univ.). Sec., J. F. McLaughlin, School of Civil Engineering, Purdue Univ., Lafayette, Ind.

April 20-22—Lincoln, Neb.

AMERICAN WATER WORKS ASSOC.—Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., J. J. Rossbach, Jr., Metropolitan Utilities District, 3906 N. 48th St., Omaha, Neb.

April 20-22—Emporia, Kans.

AMERICAN WATER WORKS ASSOC.—Kansas Section. Annual Meeting (Broadview Hotel). Sec., H. W. Badley, Neptune Meter Co., 119 W. Cloud, Salina, Kans.

April 22-24—Emporia, Kans.

KANSAS SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Broadview Hotel). Sec., H. W. Badley, Neptune Meter Co., 119 W. Cloud, Salina, Kans.

April 24-27—Buffalo, N. Y.

AMERICAN WATER WORKS ASSOC.—Canadian Section. Annual Meeting (Statler Hotel). Sec.-Treas., Dr. A. E. Berry, 72 Grenville St., Toronto, Canada.

April 24-27—Charleston, S. C.

NATIONAL ASSOC. OF HOUSING & REDEVELOPMENT OFFICIALS—Southeastern Regional Council. Annual Meeting (Francis Marion Hotel). For information: National Assoc. of Housing & Redevelopment Officials, 1313 E. 60th St., Chicago 37, Ill.

April 27-30—Berkeley, Calif.

CALIFORNIA SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Hotel Claremont). Sec.-Treas., Alfred D. Leipzig, c/o Hyperion Treatment Plant, 12000 Vista del Mar, Venice, Calif.

April 28-30—Billings, Mont.

AMERICAN WATER WORKS ASSOC.—Montana Section and MONTANA SEWAGE & INDUSTRIAL WASTES ASSOC. Joint Meeting (Northern Hotel). Sec.-Treas., A. W. Clarkson, c/o State Board of Health, Helena, Mont.

April 28-30—Tucson, Ariz.

ARIZONA SEWAGE AND WATER WORKS ASSOC. and AMERICAN WATER WORKS ASSOC.—Arizona Section. Joint Meeting (Pioneer Hotel). Sec., A. D. Cox, 2612 N. 16th St., Phoenix, Ariz.

May 3-5—Washington, D. C.

AMERICAN PUBLIC POWER ASSOC. Annual Meeting (Hotel Shoreham). Gen. Mgr., Alex Radin, American Public Power Assoc., Suite 830, 919 18th St. N.W., Wash. 6, D. C.

May 3-5—Lafayette, Ind.

PURDUE INDUSTRIAL WASTE CONFERENCE. Annual Meeting (Purdue University). Sec., Don E. Bloodgood, Civil Engineering Bldg., Purdue Univ., Lafayette, Ind.

May 4-6—Portland, Ore.

AMERICAN WATER WORKS ASSOC.—Pacific N.W. Section. Annual Meeting (Benson Hotel). Sec., F. D. Jones, W. 2108 Maxwell Ave., Spokane 11, Wash.

May 10-12—Washington, D. C.

NATIONAL HIGHWAY USERS' CONFERENCE. Biennial Convention (Mayflower Hotel). Dir., Arthur C. Butler, 966 National Press Bldg., Wash., D. C.

May 10-14—Chicago, Ill.

INTERNATIONAL MUNICIPAL CONFERENCE. Joint Meeting of the United States Conference of Mayors and the Canadian Federation of Mayors & Municipalities (Conrad Hilton). Exec. Dir., Harry R. Betters, 1707 H Street N.W., Washington 6, D. C.

May 11-13—Wenatchee, Wash.

ASSOCIATION OF WASHINGTON CITIES. Annual Convention (Cascadian and Columbian Hotels). Exec. Sec., Chester Biesen, 250 Smith Hall, Univ. of Washington, Seattle 5, Wash.

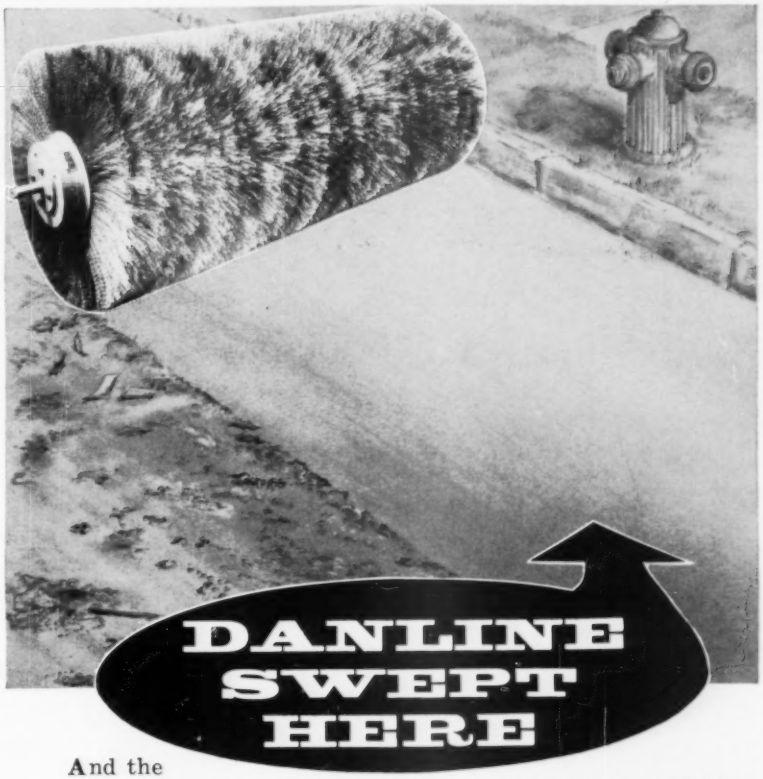
May 11-13—Tucson, Ariz.

LEAGUE OF ARIZONA CITIES AND TOWNS. Annual Conference (Pioneer Hotel). Exec. Dir., John J. DeBolske, 2727 North Central Ave., Phoenix, Ariz.

May 14-18—New York, N. Y.

AMERICAN ASSOC. OF AIRPORT EXECUTIVES. Annual Convention and Business Meeting (Waldorf-Astoria Hotel). Exec. Sec., F. R. Hoyt, P. O. Box 1450, El Paso, Texas.

(Continued on page 203)



And the effect is obvious. Nowhere will you find a more suitable sweeping brush than Danline. Thousands of users attest to the cleaner streets they now get every week with their Danline brush. In addition, they find they can lick the problems of heavy spring clean-up, mud from run-off or construction jobs . . . even handle sizeable deposits of sand, or snow, or paving chips. Danline's unique construction, which gives a brushing surface of uniformly distributed round steel wires, is directly responsible for its unmatched, long-life cleaning ability. Where else can you get a product that gives you so much more with up to 75 per cent savings in brush replacement costs? Write or call today for illustrated brochure.

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NEWARK BRUSH COMPANY

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With the new streets — curbs and sparkling, silicon carbide-impregnated sidewalks of modern concrete

For 43 blocks of downtown streets, Abilene chose CONCRETE

...the pavement built to stay put for 50 years and more!

In an all-out fight against "downtown blight", Abilene, Texas, modernized the entire business district with all new concrete streets in one giant renewal project.

Abilene shoppers and shopkeepers alike can expect a whole lifetime of enjoyment from their new, attractive concrete streets. Pavement is six inches of portland cement concrete on a 6-inch soil-cement subbase.

The new streets won't be blocked off for expensive surface build-up treatments every few years or torn up for major repairs. Even on the hottest days concrete doesn't get soft, tacky or slick. Traffic can't push its solid surface into ripples and washboards.

There are no "moving parts" in concrete to cause hidden wear. In fact, concrete grows stronger year by year. That's why engineers predict today's modern concrete pavements will far outlast any other type, serve 50 years and more!

Concrete pleases taxpayers, too. Maintenance costs run so low that the moderate first cost isn't just a down payment. Even on street lighting money is saved. Concrete reflects light, so fewer fixtures are needed. City electric bills go down.

Cities everywhere with urban renewal problems are going to concrete. It's the first big step in an effective modernization program.

"The 'new look' of our downtown business district is causing plenty of excitement in and around Abilene!"

Says HENRY NABERS, ***Abilene City Manager***

"Our bright new concrete streets and sidewalks are helping to bring shoppers back downtown. Business has really improved since the dedication ceremony.

"The durability of concrete and the low upkeep costs make it the best investment. The good experience with Abilene streets paved with concrete as far back as 1924 helped convince us of that."

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Conventions—When and Where

(Continued from page 201)

May 15-20—Bal Harbour, Fla.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Americana Hotel). Exec. Sec., Raymond J. Faust, 2 Park Ave., New York, N. Y.

May 16-19—St. Paul, Minn.
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (Lowry Hotel). Sec., Arthur J. Shinners, Town Hall, Brookline, Mass.

May 16-20—Montreal, Canada
NATIONAL FIRE PROTECTION ASSOC. Annual Meeting (Queen Elizabeth Hotel). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 22-26—Cincinnati, Ohio
AIR POLLUTION CONTROL ASSOCIATION Annual Meeting (Netherland-Hilton). Exec Sec., Arnold Arch, 4400 Fifth Ave., Pittsburgh 13, Pa.

May 22-26—Bal Harbour, Fla.
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Conference (Americana Hotel). Exec. Dir., Dennis O'Harrow, 1313 E. 60th St., Chicago 37, Ill.

***May 23-25—Gatlinburg, Tenn.**
TENNESSEE MUNICIPAL LEAGUE. 21st Annual Convention (Riverside Hotel). Sec., Herbert J. Bingham, Life and Casualty Tower, Nashville 3, Tenn.

May 24-27—Washington, D. C.
NATIONAL RIVERS & HARBORS CONGRESS. 47th National Convention (Mayflower Hotel). Exec. Vice-Pres., William H. Webb, Suite 523-A, La Salle Bldg., 1028 Connecticut Ave. N.W., Washington 6, D. C.

May 28-June 3—San Juan, Puerto Rico
INTERNATIONAL FEDERATION FOR HOUSING & PLANNING and INTER-AMERICAN PLANNING SOCIETY. Joint World Congress (University of Puerto Rico). Sec.-Gen., Humberto Espinosa, P. O. Box 1729, San Juan Puerto Rico.

June 2-4—Ocean City, N. J.
EASTERN ASSOC. OF FIRE CHIEFS. Annual Convention (Flanders Hotel). Sec., Edwin J. Clark, Box 328, Wayne, Pa.

***June 5-8—Honey Harbour, Ont., Can.**
ONTARIO WATER RESOURCES COMMISSION. 7th Industrial Wastes Conference (Delawanna Inn). Sec., D. S. Caverly, Ontario Water Resources Comm., East Block, Parliament Bldg., Toronto, Ont.

June 5-9—New York, N. Y.
MUNICIPAL FINANCE OFFICERS ASSOC. OF THE U. S. AND CANADA. Annual Meeting (Statler Hilton Hotel). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chcago 37, Ill.

June 5-10—Atlantic City, N. J.
NATIONAL CONFERENCE ON SOCIAL WELFARE. Annual Forum (Convention Hall, Ambassador and Ritz-Carlton). Sec., Joe R. Hoffer, 22 W. Gay St., Columbus 15 Ohio.

***June 14-17—Pittsburgh, Pa.**
AMERICAN WATER WORKS ASSOC.—Pennsylvania Section. Annual Meeting (Hilton Hotel). Sec.-Treas., L. S. Morgan, 413 First National Bank Bldg., Greensburg, Pa.

June 15-17—Madison, Wis.
CENTRAL STATES SEWAGE AND INDUSTRIAL WASTES ASSOC. Annual Meeting (Hotel Lorraine). Sec.-Treas., Scott E. Linsley, 2400 Childs Road, St. Paul 6, Minn.

***June 15-17—Ottumwa, Iowa**
IOWA SEWAGE AND INDUSTRIAL WASTES ASSOC. Annual Meeting (Ottumwa Hotel). Sec., L. F. Skorczeski, 207 South 15th Ave., Marshalltown, Iowa.

***June 15-17—Columbus, Ohio**
OHIO SEWAGE AND INDUSTRIAL WASTES TREATMENT CONFERENCE. Annual Meeting (Neil House). Sec.-Treas., H. M. Crane, 3400 Northeastern, Oklahoma City 5, Okla.

***June 15-17—Richmond, Va.**
VIRGINIA WASTES AND SEWAGE WORKS ASSOC. Annual Meeting (John Marshall Hotel). Sec.-Treas., Orval J. Hand, Hercules Powder Co., Hopewell, Va.

***June 19-21—Ocean City, Md.**
MARYLAND MUNICIPAL LEAGUE. 12th Annual Conference (Atlantic Hotel). Exec. Sec., Alan Beals, Maryland Municipal League, Box 276, College Park, Md.

***June 19-22—Rochester, N. Y.**
NEW YORK CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Manger Hotel). Exec. Sec., Addison Mallery, 6 Elk St., Albany, N. Y.

June 26-July 1—Atlantic City, N. J.
AMERICAN SOCIETY FOR TESTING MATERIALS. Annual Meeting (Chalfonte-Haddon Hall). Sec., R. J. Painter, 1916 Race St., Philadelphia 3, Pa.

(Continued on page 205)

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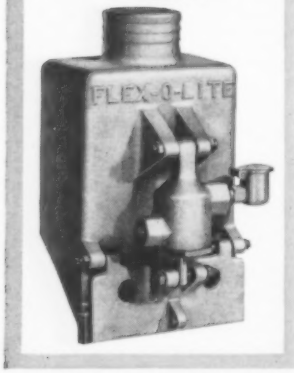

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NEWNAN, GEORGIA

Conventions—When and Where

(Continued from page 203)

June 27-29—New York, N. Y.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. 61st Annual Meeting (Waldorf-Astoria Hotel). Chairman, Wolcott E. Andrews, 238 East 68th St., New York 21, N. Y.

July 18-22—San Francisco, Calif.

NATIONAL ASSOCIATION OF SANITARIANS. Annual Meeting (Jack Tar Hotel). Sec., Nicholas Pohlit, c/o Univ. of Denver, Denver 10, Colo.

Aug. 14-17—New York, N. Y.

AMERICAN PUBLIC WORKS ASSOC. Annual Convention (Manhattan Hotel and New York Coliseum). Exec. Dir., Robert D. Bugher, 1313 E. 60 St., Chicago 37, Ill.

Aug. 14-17—Miami Beach, Fla.

NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Meeting (Hotel Fontainebleau). Exec. Dir., Bernard F. Hillenbrand, 1001 Connecticut Ave. N.W., Washington 6, D. C.

Aug. 14-19—Boston, Mass.

NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Statler-Hilton Hotel). Sec., L. C. Chadwick, Dept. of Horticulture, Ohio State Univ., Columbus 10, Ohio.

Sept. 11-15—Long Beach, Calif.

AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Convention (Lafayette Hotel). Exec. Sec., Alfred B. LaGasse, Oglebay Park, Wheeling, W. Va.

Sept. 11-16—Pittsburgh, Pa.

ILLUMINATING ENGINEERING SOCIETY. National Technical Conference (Penn-Sheraton Hotel). Managing Dir., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

***Sept. 12-15—Rochester, N. Y.**

INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Meeting (Manger Hotel). Dir., B. Richter Townsend, 232 Madison Ave., New York 16, N. Y.

Sept. 12-16—Chicago, Ill.

INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., David M. Baldwin, 2029 K St. N.W., Washington 6, D. C.

Sept. 19-22—New York, N. Y.

INTERNATIONAL MUNICIPAL SIGNAL ASSOC. Annual Conference (Hotel Astor). Sec., Irvin Shulsinger, 130 West 42nd St., New York 36, N. Y.

***Sept. 19-23—Boston, Mass.**

NATIONAL MUNICIPAL CEMETERY CONFERENCE. Annual Meeting (Statler Hotel). Sec., Vernon J. Birkhimer, Bureau of Cemeteries, 4809 W. Franklin St., Richmond 26, Va.

***Sept. 25-28—Palo Alto, Calif.**

NATIONAL ASSOC. OF TAX ADMINISTRATORS. Annual Meeting (Rickey's Studio Inn). Exec. Sec., Charles F. Conlon, 1313 East 60th St., Chicago 37, Ill.

***Sept. 26-30—Washington, D. C.**

NATIONAL RECREATION CONGRESS. Annual Convention (Shoreham Hotel). Sec., Willard B. Stone, 8 W. 8th St., New York, N. Y.

Oct. 2-6—Philadelphia, Pa.

WATER POLLUTION CONTROL FEDERATION, formerly the Federation of Sewage and Industrial Wastes Associations. Annual Meeting (The Trade & Convention Center). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave. N.W., Washington 16, D. C.

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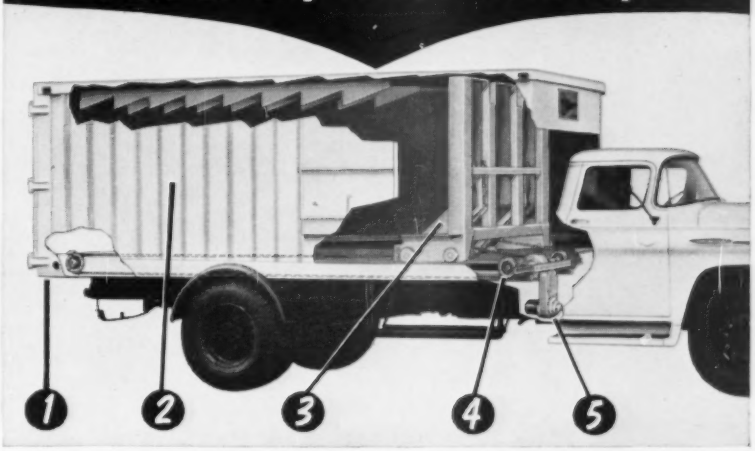

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MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Water Works Manual

MANUAL FOR WATERWORKS OPERATORS—*Joseph M. Sorrels, Editor. Texas Water and Sewage Works Association, 2202 Indian Trail, Austin 3, Texas.* 1959. 866 *pp.* $9.

This fourth edition of the *Manual For Waterworks Operators* is greatly enlarged to keep abreast of the rapid advances made by the water-works industry and to include several new subjects. Authors of the various sections were selected by the Manual Committee on the basis of experience and knowledge of special subjects. Included are discussions on water supply, water treatment and disinfection, pumping, measurement, general chemistry, storage, distribution, testing and all other phases. In addition the manual includes chapters on swimming-pool operation, water for industrial use, emergency operations, financing and public relations. The book serves as both a reference and guide for water-works personnel.

World's Metropolitan Areas

THE WORLD'S METROPOLITAN AREAS—*International Urban Research, Institute of International Studies, University of California. University of California Press, Berkeley 4, Calif.* 1959. 115 *pp.* $3.

Another group of university-sponsored scholars dip into the apparently inexhaustible pocketbook of the Ford Foundation, producing an index of urban areas around the world with populations of more than 100,000. It also gives an analysis of how these metropolitan areas are selected on a world basis.

Peculiarly enough, the authors did not include Puerto Rico or Hawaii in the United States. Puerto Rico's San Juan was named as one of the All-America Cities for 1959 and Hawaii's Honolulu received an honorable mention in the same competition.

The Reason for Slums

THE REAL ESTATE MARKET IN AN URBAN RENEWAL AREA—*By Chester Rapkin. New York City Planning Commission, 2 Lafayette Street, New York, N. Y.* 1959. 139 *pp.* $1.

This is the study which documents that frequently quoted statement that old brownstone slum properties earn an average of $2.30 per square foot annually in rents, compared with $1.30 for well-maintained elevator apartments. The author points out that the high rents in the brownstones are accompanied by a considerable degree of crowding and quotes 166 square feet available per person, compared with roughly three times that in elevator apartments. For what it is worth by comparison, the Soviets are currently building new apartments at an impressive rate, but are designing them on the basis of only 90 square feet of "living space" per person, or probably about 120 square feet of total area. For further comparison, the author finds old-law tenements in the same study area providing only 88 square feet per person.

The text has much to justify a fat boost in assessment on the land occupied by the slum properties. The area being studied borders New York's famous Central Park and the real estate commands a high price. Nevertheless, the well-maintained elevator buildings represent only 6% of the residential properties, but account for half the taxable assessed value. Thus, the present taxing practice in effect encourages further deterioration, rather than discourages it.

Of course, reassessment is a touchy subject in any city. Nevertheless, it has to be faced, and generally a wise city administration gets a good, representative citizens' committee to do the initial investigation and, in effect, "force" the action. This would be a good book for the members of that committee to have for reference.

As a matter of fact, it is a good, readable little book for any municipal administrator.

Street Expenditure Manual

COST ACCOUNTING FOR STREETS AND HIGHWAYS—*Procedural Manual 6B. National Committee on Urban Transportation, Public Administration Service, 1313 East 60th Street, Chicago 37, Ill.* 1959. 35 *pp.* $2.

A detailed description of a cost-accounting system necessary to provide adequate data concerning expenditures for street and highway facilities. This manual, when used in conjunction with the procedures set forth in *Manual 6A, Financial Records and Reports,* also published by the

Insure against flies and mosquitoes next summer by including Buffalo Turbine Sprayers in your budget NOW

- Enjoy longer lasting, more efficient, wide-area insect control for as little as 15 cents per acre.
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Yes, now is the time to include the necessary funds in the budget to rid your community of disease carrying flies and mosquitoes. And the most efficient most economical equipment you can buy is the Buffalo Turbine Sprayer-Duster that permits TURBO-SPRAYING of liquids for larviciding or TURBO-DUSTING for adult insect control. These methods can be carried out separately or simultaneously as desired.

A powerful "Turbulent Air" blast atomizes and blows spray or dust (velocity up to 180 M.P.H., volume 14,000 cu. ft. of air per minute) in a controlled pattern.

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Public Administration Service, should enable local government to plan properly and to control their outlays for street and highway purposes. The system outlined may be used by local governments of any size.

Wages in the Metropolis

WAGES IN THE METROPOLIS—*By Martin Segal. Harvard University Press, Cambridge 38, Mass.* 1960. 211 *pp.* $4.75.

Another of the series of texts undertaken by the Graduate School of Public Administration, Harvard University, for the New York Regional Plan Association. The author's conclusions are a little hard to pinpoint. He points out that with European immigration cut off, the metropolis has had to depend on displaced farm labor and Puerto Ricans for a labor force, despite a certain amount of sociological excitement about both. He indicates that wage differentials don't make a large difference in the desirability of one area over another. But he also points out that in cities like New Orleans and Memphis wage rates are from 20% to 25% less than they are in cities like New York, Detroit, San Francisco, Chicago, Los Angeles and Portland. Curiously enough, he doesn't think that public policies have much effect on a region's wage scale. He should take a second look. Bad public policies can cripple a region. Good ones can give it the breath of economic life.

Loyalty Oaths

TO TRY MEN'S SOULS—*By Harold M. Hyman. University of California Press, Berkeley 4, Calif.* 1959. 414 *pp.* $6.

A soul-searching book that will make enlightening reading for any administrative or policy-forming municipal official, since the tense, but frequently unreliable loyalty test often rears its head on the local-government level.

The book carefully traces American history from the Revolution to date, and documents the uncertainty and confusion that these tests have created. It shows them to be weak tools in uncovering subversive activities of real danger. It tells where they actually have made the work of spies easier, since a good espionage agent will swear allegiance with passion and eloquence to the country he plans to overthrow. Yet it discloses that the advocates of the loyalty oath consist of such names as Tom Paine, Jefferson, Lincoln, Jefferson Davis, Wilson, Franklin D. Roosevelt, Truman, and Eisenhower.

In its present form, the book is cyclopedic, yet easy to read. The author ought to rewrite it to about half its present size and offer it to a paperback publisher. It should make a big hit.

Industrial-Waste Regulations

GUIDE LINES FOR DRAFTING A MUNICIPAL ORDINANCE ON INDUSTRIAL-WASTE REGULATIONS AND SURCHARGES—*By Edward J. Cleary. American Public Works Association, 1313 East 60th Street, Chicago 37, Ill.* 1959. 20 *pp.* $3.

A guide to cities or agencies considering the adoption or revision of regulations and surcharges for the acceptance of industrial-waste discharges. Topics covered include admission of industrial waste into public sewers, prohibited discharges, control of admissible water, industrial waste surcharges, billing, penalties and validation. The manual has been organized to include reasons why certain provisions are recommended, and outlines how they may be incorporated into an ordinance.

Urban Studies

A FRAMEWORK FOR URBAN STUDIES—*By Dr. Coleman Woodbury. Highway Research Board, 2101 Constitution Avenue, Washington 25, D. C.* 1959. 29 *pp.* $1.20.

Evidently all the scoldings that the highway engineers have been receiving about their inability to understand the fundamentals of urban life have taken hold. Grants from the Dodge Division of the Chrysler Corporation, the American Trucking Associations Foundation, and the U. S. Bureau of Public Roads have made this little study possible. In it, the author states his intention to:

- point out the scale, complexity and significance of urban growth.
- outline major areas of urban study that can be encouraged by the Highway Research Board.

He divides his recommended study areas into three classes with a number of subclasses:

Class 1

—*Urban development,* embracing residential dispersal, industrial and commercial decentralization, and suburban "stratification."

—*Urban planning,* including highway planning, open space, recreation needs, future of central areas, and the absorption of farm land for urban needs.

—*Urban government,* finance.

—*Public education,* and participation in public affairs.

Class 2

—*Expressway location.*

—*Reverse commuting,* inter-suburban and intra-fringe travel.

—*Mass transit.*

—*Land-use patterns,* and travel volume.

Class 3

—*Relocation of displaced families.*

—*Eminent domain* and other land-acquisition procedures.

—*Studies of standards.*

Obviously this is a commendable list for the highway engineers to tackle. Maybe the little delay in the current highway program was beneficial after all.

Swimming Pool Data

MUNICIPAL SWIMMING POOLS—*League of Wisconsin Municipalities, 30 East Johnson St., Madison 3, Wis.* 1959. 152 *pp.* $2. 100 *copies available for distribution.*

A compilation of individual data sheets on 66 pools operated by 65 Wisconsin cities and villages, together with nine pools operated by the Milwaukee county park commission. Information given includes type of pool (concrete, steel, block, earth, asphalt, etc.); size, construction cost, year built, financing, bathhouse facilities, designer or architect firm, operating costs and gross receipts, and salaries of personnel.

Industrial Development

AREA DEVELOPMENT PROMOTION FOR PROGGRESS AND PROSPERITY—*The New York Times, Area Development Advertising Department, Times Square, New York 36, New York.* 1959. 64 *pp. In limited supply.*

A promotion-type book devoted perhaps 25% to a superficial discussion of ways to attract industry, and 75% to why you should advertise for industry in the *New York Times.*

The New York Times is one of the very few papers in the nation actively soliciting advertising that urges local industry to leave town and settle elsewhere. Judging by the movement of industry out of New York, this campaign is enjoying some success.

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Council-Manager Government

THE STORY OF THE COUNCIL-MANAGER PLAN—*National Municipal League, Carl H. Pforzheimer Building, 47 East 68th Street, New York 21, N. Y. Twenty-Seventh Edition.* 1959. 32 pp. 25 cents.

This pamphlet briefly explains the council-manager plan, its history, and how it functions in city government. The stories of 14 cities that profited by the plan are told. There is also a graphic comparison of council-manager government with the mayor-council form and the commission form, and a directory of places operating under the accepted principles of the council-manager plan.

The booklet lists endorsement of the plan by people such as Herbert Hoover, Senator Kefauver, certain representatives of AFL-CIO, and the Pennsylvania Federation of Labor, AFL.

ADMINISTRATION & GOVERNMENT

GENERAL—Some Basic Financial Statistics, City and County Government (not including schools). Administrative Services Department, Administrative Division, City Hall, Boston, Mass. 1959. 20 pp.

CALIFORNIA—Modernization of Noncharter County Law, Final Report of the Assembly Interim Committee on Municipal and County Government. Office of the Chief Clerk, California State Assembly, State Capitol, Sacramento, Calif. 1959. 18 pp.

ANNUAL REPORTS WORTH READING

BERKELEY, MO.—Annual Report 1958-59. Office of the City Manager, City Hall, 6140 Middleway Dr., Berkeley, Mo. 1959. 10pp.

FILLMORE, CALIF.—Annual Report 1958-59. Office of the Mayor, City Hall, Fillmore, Calif. 1959. 10pp.

FINANCE & TAXATION

BAYTOWN, TEX.—Annual Budget 1959-60. Office of the City Manager, City Hall, Baytown, Tex. 1959. 59 pp.

CONNECTICUT—Grand Lists and Tax Rates of Connecticut Towns and Cities 1958 and 1959. Institute of Public Service, The University of Connecticut, Storrs, Connecticut. 1959. 4 pp.

PENNSYLVANIA—Assessors' Handbook. By John H. Vanderzell, Research Associate, Bureau of Municipal Affairs, State House, Harrisburg, Pa. 1959. 46 pp.

VIRGINIA—Fees for Building, Plumbing and Electrical Permits and Inspections in Virginia Municipalities. League of Virginia Municipalities, 905 Travelers Bldg., Richmond 19, Va. 1959. 14 pp. $1.

PLANNING, ZONING & HOUSING

FLORENCE TWP., N. J.—Comprehensive Master Plan. Community Planning Associates, P. O. Box 206, West Trenton, N. J. $3.

MEMPHIS, TENN.—Memphis Civic Center, Part 3. League of Memphis Architects, Inc., 1027 Falls Building, Memphis, Tenn. 1959. 30 pp.

MERCED, CALIF.—The Next Twenty Years: Report on the General Plan. Office of the City Manager, City Hall, Merced, Calif. 1959. 146 pp.

NEW YORK—1959 Report of the Joint Legislative Committee on Metropolitan Area Study. Joint Legislative Committee on Metropolitan Area Study, 739 Onondaga County Savings Bank Bldg., Syracuse 2, N. Y. 1959. 109 pp.

URBAN RENEWAL

DES MOINES, IA.—Let There Be Light Instead of Blight. Department of Redevelopment and Housing, City Hall, Des Moines, Ia. 1959. 12 pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES

From February 8th to March 1st, 1960

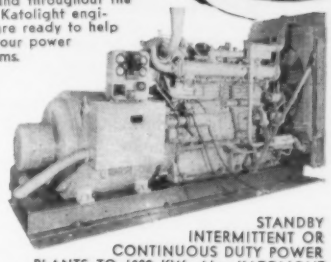
Date of Issue	Locality	Amount in $1000	Purpose	Term Yrs. to Maturity	Rate of Int.	Yield %
2/ 8/60	Fort William, Ont.	725	City Improvement	....	6.50	....
2/ 8/60	Great Falls, Mont.	830	Sewage Treatment Plant	10½	....	3.78
2/ 9/60	Florence, Ky.	1,760	Water and Sewer Revenue	17½	....	4.54
2/ 9/60	High Point, N. C.	2,000	Sanitary Sewer	10	....	3.32
2/ 9/60	Winthrop, Me., Water Dist.	565	Sewer and Water	20	4.20	4.19
2/10/60	Alexandria, Va.	4,137	Public Improvement	10½	....	3.57
2/10/60	Allen Co., Ohio	725	Airport Improvement	10½	3.75	3.72
2/10/60	Indianapolis Ind., Sanitary Dist.	1,470	Sanitary	16½	3.50	3.43
2/15/60	Granby, Que.	1,030	Improvement	12¼	6.00	6.44
2/15/60	St. Mary Par., La., Gravity Drainage Dist. No. 3	600	Drainage	11¾	4.00	4.11
2/16/60	Lexington, Ky.	2,000	Sanitary Sewer Revenue	17½	....	3.87
2/17/60	Charlottesville, Va.	500	Sewerage Improvement	10½	3.15	3.14
2/17/60	Jackson, Miss.	930	Street Improvement	5½	3.63	3.61
2/23/60	Flint, Mich.	557	Street and Sewer	5	....	3.30
2/23/60	Garfield Heights, Ohio	73	Fire Station	5¾	4.25	4.07
2/25/60	Morristown, N. J.	858	General Obligation	9½	3.65	3.64
2/25/60	Plymouth Twp., Mun. Auth.	685	Sewer Revenue	40	4.30	....
2/29/60	Niagara Co., N. Y.	4,000	Bond Anticipation	½	2.61	2.61
3/ 1/60	Los Angeles Cty., Calif., Malibu Waterworks Dist. No. 29	3,200	Water	21	5.00	4.96
3/ 1/60	West Seneca, N. Y.	2,977	Town Improvement	14¾	4.10	4.06

Compiled from THE BOND BUYER

ST. PETERSBURG'S NEW
SEWAGE DISPOSAL PLANT
Equipped With
KATOLIGHT
EMERGENCY POWER
PROTECTION!

. . . . INSURES OPERATION OF VITAL ELECTRIC EQUIPMENT WHEN NORMAL POWER FAILS!

The St. Petersburg, Florida disposal plant is a typical example of planned preparation against power failure. Industrial, commercial, institutional and municipal Katolight installations are found throughout the world. Katolight engineers are ready to help solve your power problems.



STANDBY INTERMITTENT OR CONTINUOUS DUTY POWER PLANTS TO 1000 KW. Also KATOLIGHT PORTABLE POWER PLANTS to 125 KW.

Write For Details!

KATOLIGHT CORPORATION
Box 891-25 Mankato, Minnesota

One Tractor Powers 30 Grounds Maintenance Tools!

The versatile 6.6HP Gravely Tractor powers a complete, year-round maintenance system!

You cut costs two ways: (1) You buy only ONE power unit—with a choice of 30 quickly interchangeable Tools; (2) The Gravely does your jobs faster, easier, more economically!

Standardize on Gravely—as many cost-conscious cities have! Gravely gives you more power at the Tool through direct, all-gear Drive. Simple, precise control, low-cost dependable power for year-round work. Tools that do your jobs more efficiently!

FREE CATALOG & CIRCULAR

Find out why and how Gravely does the job best. Write TODAY for "How to Cut Grounds Maintenance Cost" and Gravely Catalog!

GRAVELY TRACTORS, INC.
P.O. BOX 636D DUNBAR, W. VA.

PERFORMANCE-PROVED SINCE 1922

ETNYRE
Street Flushers
"THE MACHINE OF A DOZEN USES"

SUPERLINER MODEL . . . REAR ENGINE DRIVE

You'll be proud of this modern, streamlined street flusher! Regularly furnished with 3 nozzles, 600 G. P. M. pump, 800 to 3000 gallon tank, mechanical controls, vertical valves. Motor enclosed in rear compartment is quickly accessible for servicing. Get literature, prices and delivery from your Etnyre dealer or write us today.

E. D. ETNYRE & CO., Oregon, Illinois

HOW TO BUY THE BEST CHIPPER FOR YOUR NEEDS

1. **Ask for a Free Demonstration.** Your dealer will gladly demonstrate the new 1960 Asplundh . . . will even run it side-by-side with any other chipper to let you compare machines and results.

2. **Look for the features that give you these benefits.**

Chipping Speed. By actual test Asplundh is the fastest chipper made—which your dealer will gladly prove.

Low maintenance cost. The Asplundh has fewer moving parts. This means lower maintenance, less down time.

Safety to workers and passers-by. Asplundh blades are tapered and wedged—cannot fly out.

Ease of operation. Unskilled labor can operate the Asplundh with ease—change blades quickly.

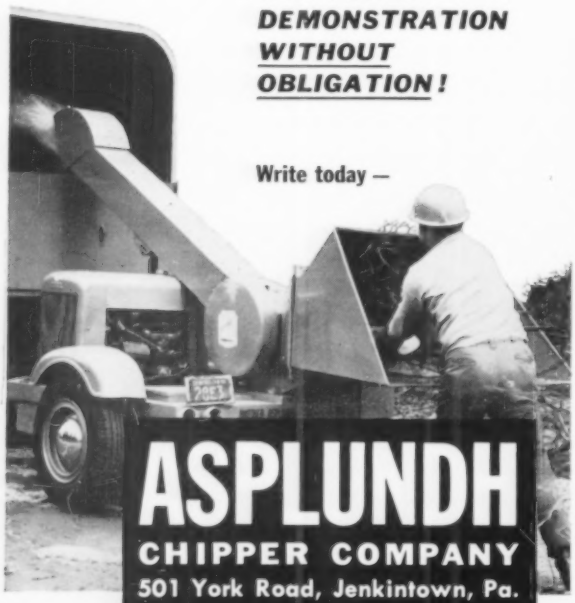
Highway safety. Asplundh's underslung engine and axle place the center of gravity low for safe, true highway tracking.

Big capacity. Asplundh chips all you can feed it—limbs up to 6" diameter—hour after hour, day after day.

3. See for yourself why Asplundh outsells all other makes. Write for new brochure of testimonials from satisfied users.

ASK FOR A DEMONSTRATION WITHOUT OBLIGATION!

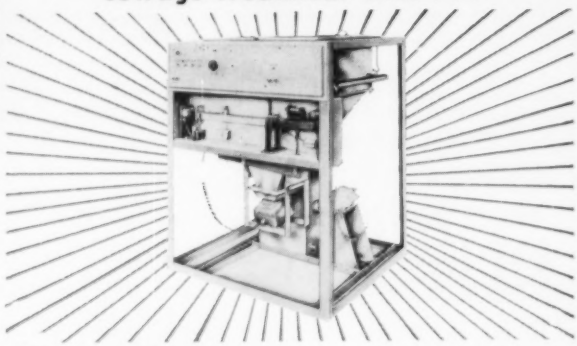
Write today —



ASPLUNDH CHIPPER COMPANY
501 York Road, Jenkintown, Pa.
TUrner 7-2500

Proven in service by the world's largest tree company

accurate, dependable, continuous weigh feeding of dry chemicals in water and sewage treatment with . . .



SYNTRON

Diminishing Batch

WEIGH FEEDER MACHINES

SYNTRON Weigh Feeder Machines enable you to set up pre-calculated chemical treatment in which the additive is accurately weighed and then fed on a pre-selected pounds per hour basis—from 3 pounds to 300 pounds per hour.

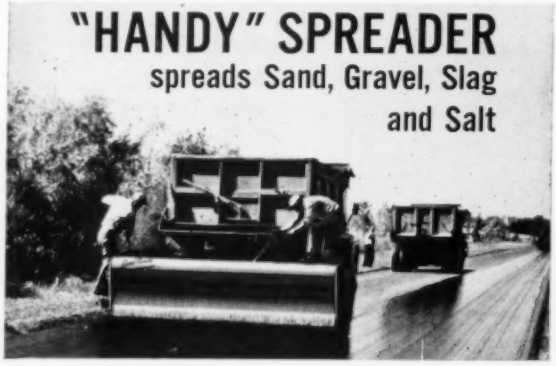
With SYNTRON Weigh Feeders you are assured an accurate amount of material has been injected into the process at a smooth, even rate over a given period.

Fill your bulk weigh feeding needs with SYNTRON Diminishing Batch Weigh Feeder Machines.

SYNTRON COMPANY
Quality Equipment Since 1921
430 Lexington Ave. Homer City, Penna.

"HANDY" SPREADER

spreads Sand, Gravel, Slag and Salt



Spreads aggregate from powder fine to 3" depths.

Automatic Transmission operates forward or reverse without shifting gears.

The Good Roads "Handy" Aggregate Spreader is designed for smooth and accurate spreading of sand, slag, stone, gravel, calcium-chloride, etc., up to 1" in diameter—from powder fine to 3-inch depths.

Ideal for parking lot, street, road, highway construction and maintenance, it is available in 6 models for spread widths of 8, 9, 10, 11, 12, and 13 feet. Narrower widths can be accomplished by use of block-off plates.

For complete details see your local distributor, or write to:

GOOD ROADS MACHINERY Corp.
MINERVA, OHIO

Tractor-shovel

. . . just introduced by Hough, has 4-wheel drive, 4-wheel brakes, operating capacity of 3,000 pounds, and comes equipped with a 1-cubic-yard bucket. It is called the H-30 and offers three speed ranges in each direction.

Clearance under cutting edge, with bucket in dumping position, is 8′ 4″; dumping reach ahead of front tires is 29″. Boom structures are positioned ahead of and away from the operator. Power source is a 77½-hp heavy-duty gas engine. For complete information, write THE FRANK G. HOUGH CO., 710 SEVENTH AVE., LIBERTYVILLE, ILL., or use the Post Card on Page 54. Circle No. 938.

Experiment in mass rubbish removal a labor-saving operation

A Hobbs Hyd-Pak trailer and a huge mobile Daybrook Jib Boom crane working as a team enable two men (instead of six) to clear fast-forming trash heaps in the palm tree-studded Miami area.

The crane removes in one bite as much as a laborer can in 20 or 30 minutes. Its clam shell bucket rotates 300° to facilitate picking up rubbish and to line it up to go into the 9-foot opening of the self-packing Hyd-Pak trailer. Controls for both crane and carrier are located in a single cab. Seat swivels to face either set of controls.

The trailer contains 35 cubic yards of space. Trash and refuse are compressed by a hydraulically-driven compressor plate exerting a pressure of 1,740 pounds per square foot of plate surface.

The unique unit was designed at the suggestion of Harris N. Buckner, Dade County (Fla.) Waste Division Chief, and is proving such a labor-saving device that he has requested the Metropolitan county government to approve purchase of four more cranes and eight additional trailers as a start on a trash pickup program for the county.

For additional information, write HOBBS HYD-PAK DIVISION of HOBBS TRAILERS, FORT WORTH, TEXAS, or DAYBROOK HYDRAULIC DIVISION OF YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO, or use the Post Card on Page 54. Circle No. 936.

New grader series

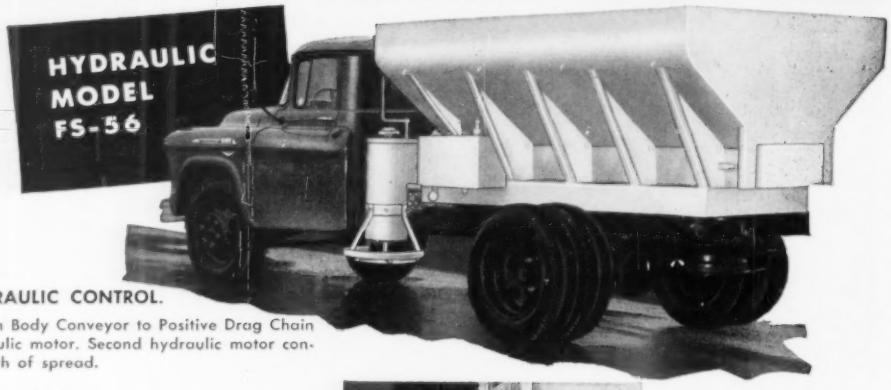
Huber - Warco's new series of standard transmission motor graders offer greater selection of diesel engines and horsepower (83-160), completely new constant mesh transmission, including range shift, better visibility of work area and blade area, and greater operator comfort.

Design refinements are several and include turning radius reduced by 4 feet, additional 3° lean of front wheels, circle and drawbar that give less stress. The area of the four wear plates has been increased. Plates are now reversible. Circle drive is now gear-driven. Optional equipment have also been redesigned.

Models in the new series are designated as 8-D, 9-D, 10-D, and 11-D. For complete details, write HUBER-WARCO CO., MARION, OHIO, or use the Post Card on Page 56. Circle No. 937.

BAUGHMAN SPREAD-MOBILE

the Spreader that's Better ...for ice control Because...



1. IT OFFERS COMPLETE HYDRAULIC CONTROL.

Speed of discharge from Drag Chain Body Conveyor to Positive Drag Chain Cross Feeder is controlled by hydraulic motor. Second hydraulic motor controls speed of distribution, and width of spread.

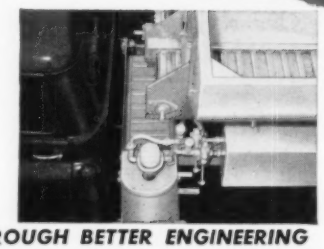
2. EXCLUSIVE "CENTER-SPRED" DESIGN.

Permits spread in front of all four wheels; improves traction, visibility and pattern.

3. ONE-MAN CAB CONTROL.

Width of spread, amount of spread, starting, stopping—all are at driver's finger tips. Driver also controls "Safety Baffle" which dampens spread when approaching pedestrians or cars.

WRITE for illustrated Brochure A-408-B.



New positive drag chain cross feeder, coordinated with main body drag chain conveyor, assures positive flow of material to side mounted distributor.

BETTER SERVICE THROUGH BETTER ENGINEERING
SERVICE AND PARTS FROM 200 SERVICE BRANCHES

BAUGHMAN MANUFACTURING COMPANY, INC.

307 SHIPMAN ROAD • JERSEYVILLE, ILLINOIS

LINDSAY BUILDERS OF RUGGED RADIAL TYPE AIR COMPRESSORS

THE test of 40 years progress in building direct drive Radial Type air-cooled, engine driven air compressors assures you of durability. Lindsay Air Compressors are built for day-in, day-out operation — year after year. That's why many public utilities, municipalities and contractors throughout the country have fleets of Lindsay radial type air compressors.

LINDSAYS Are . . .

- **Truly Portable**
- **Light in Weight**
- **Low in Original Cost**
- **Low in Operating Costs**
- **Built for Continuous Operation, Every Day**

Operating a heavy 90-lb. concrete breaker is a one-man operation when teamed with the Lindsay "Model 80" radial type air compressor.

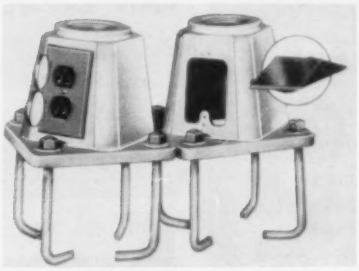
P. K. LINDSAY CO., INC.
Deerfield, New Hampshire
Everett 49, Mass.

The Importance of Better Lubrication

Many of the lubrication principles basic to different types of material handling equipment find application in passenger handling vehicles and equipment, such as elevators, "moving sidewalks" and "moving stairs."

As a result of their general acceptance, elevators and "moving stairs" are required to operate under a wide range of conditions, and their successful operation is partly due to the petroleum industry's ability to meet the increasing demands for better lubricants. In the future the public can expect faster, safer and more efficient vertical transportation which will require premium petroleum products to protect and guarantee its smooth operation.

A discussion of lubricants and their application is contained in the monthly publication *Lubrication* for January 1960. For a free copy, write TEXACO INC., 135 E. 42ND ST., NEW YORK 17, N. Y., or use the Post Card on Page 54. Circle No. 917.



These aluminum alloy pole bases provide a quick, inexpensive solution to medium-size illumination problems.

New Cast Aluminum Pole Base

Moldcast Mfg. Co. of Newark, N. J., has developed a new super-strength aluminum alloy pole base. It is said to solve the problems of inexpensive, easily adaptable, high-strength, noncorrosive, maintenance-free pole bases for many outdoor lighting jobs by being strong enough to withstand all elements yet capable of casting into pleasing exterior design. These bases are threaded for 2″, 2½″ and 3″ pipe size. Anchor bolts and mounting template are included in an all-inclusive low-cost unit. An easily accessible grounding screw is standard with all models.

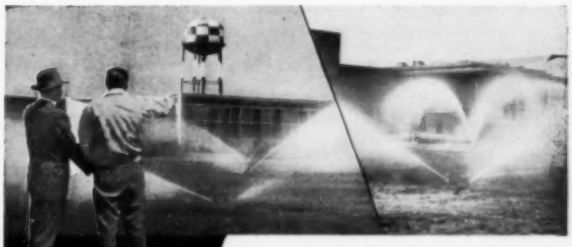
Full specifications can be obtained from DEPT. PB-15, MOLDCAST MANUFACTURING CO., 236 SOUTH ST., NEWARK 5, N. J., or by using the Post Card on Page 54. Circle No. 918.

Reversible Spreader

Designed for sealcoating, ice control, and street widening projects, the Model Y-2 reversible HI-WAY spreader features a complete unit—including body, engine and spinner—which can be reversed in 15 minutes.

Mounted forward on the left side for ice control, the unit's 18″ diameter spinner spreads evenly in widths of 5 to 40 feet with complete visual control. Material is spread ahead of the rear wheels for extra traction without loss onto road shoulders.

For sealcoating, the body is re-



NEW BUCKNER EXCLUSIVES

Adjustable GEAR DRIVEN ROTARY POP-UP SPRINKLERS

One Piece QUICK COUPLING VALVES

BUCKNER SPRINKLERS ARE YOUR BEST BUY

Buckner's research and engineering have developed new sprinklers and valves to deliver best effective water coverage pattern. Insist on genuine factory-tested Buckner irrigation equipment for extra years of service.

BUCKNER DEALERS SERVE YOU BETTER

You get technical irrigation planning assistance plus complete drawing board layouts for any sprinkler system. In many cases layouts are furnished free. Look in the yellow pages for your local Buckner dealer.

BUCKNER MANUFACTURING CO., INC.
P. O. Box 232 Fresno, California

FOR SUPERIOR DESIGN, CONSTRUCTION AND PERFORMANCE . . . FAR GREATER STRENGTH . . . UNEQUALLED SAFETY . . .

AMERICAN Approved PARK, PICNIC, PLAYGROUND AND SWIMMING POOL EQUIPMENT

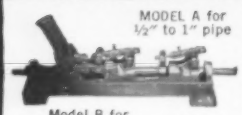
Since 1911 the finest equipment built, backed by lifetime guarantee against defective materials and construction . . . specified by leading recreational authorities for almost half a century.

Send for New Catalog

Write for Folder On AMERICAN'S JIM PATTERSON LIFETIME Aluminum DIVING BOARD WORLD'S FINEST OFFICIAL BOARD

AMERICAN PLAYGROUND DEVICE CO.
ANDERSON, INDIANA, U. S. A.
WORLD'S LARGEST MANUFACTURERS OF FINE PARK, PICNIC, PLAYGROUND, SWIMMING POOL AND DRESSING ROOM EQUIPMENT

Only the
Trojan Pipe Puller & Pusher
gives you continuous action . . .
No Resetting of Grip!



CUTS COSTS! SAVES TIME-
in installing or renewing pipe under pavement

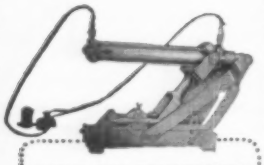
Model B for
¾" to 2" pipe

The Trojan combines pushing and pulling operations in one machine—eliminates all time-killing resetting of grip—keeps pipe continuously moving. Does the job at lower cost—in far less time.

Model A weighs 65 lbs.—requires only 5′ trench. One man can easily install the average service. 15 tons of pushing pressure possible.

Model B (either hand or air powered) needs only 5½′ trench—has 3 speeds for different soils—is reversible in 30 seconds. Push pipe comes in 30" lengths, assures straight travel.

Write today for full details!



NEW AIR POWERED
Model B
Does all the work for you. Handles ¾" to 2" pipe.

The TROJAN Manufacturing Co.
1113 Race Drive • Troy, Ohio

TAX EQUALIZATION APPRAISALS

Offering a background of a quarter century of

unduplicated experience producing high quality

appraisals for local Tax Equalization Purposes

THE STANDARD OF EQUALITY IN TAX EQUALIZATION

REVALUATIONS
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APPRAISALS

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11 WEST MONUMENT AVENUE • DAYTON 2, OHIO

BRANCH OFFICES
405 Allegheny Avenue, Hollidaysburg, Pennsylvania
329 Coddington Building, Charlotte, N. Carolina
415 Congress Street, Portland, Maine
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No other filtering medium compares with

ANTHRAFILT
Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is *best* for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT
offers important advantages over sand and quartz

DOUBLES length of Filter runs • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P. O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

The "Pick" of
MINNEAPOLIS

THE Pick-Nicollet

600 Rooms with bath from $6.00

NO CHARGE FOR CHILDREN
FREE RADIO AND TV
AIR-CONDITIONED ROOMS

Delicious Cuisine and Beverages
- **WAIKIKI ROOM**
- **JOLLY MILLER**
- **COFFEE SHOP**

ALWAYS THE BEST FOR EVERY GUEST
ALBERT Pick HOTELS

FEderal 3-3177
Thomas P. Ryan, mgr.

This multipurpose spreader incorporates the work advantage of three one-man spreaders.

versed, placing the spinner at the right rear. In this same position, but with the spinner removed, the spreader can unload aggregate in road-widening operations or windrow to the right side of the truck.

One-man operated from the cab, the Y-2 is powered by a 12.5-hp air-cooled engine (an 18-hp is also available) which drives the conveyor chain, cross auger and spinner assembly. Complete literature and specifications can be obtained from HIGHWAY EQUIPMENT CO., DEPT. H1-6, 616 "D" AVE. N.W., CEDAR RAPIDS, IA., or by using the Post Card on Page 54. Circle No. 919.

Dustless Drill Assembly

A new drilling and dust collecting assembly for use in gas leak detection work has been announced by Le Roi Division, Westinghouse Air Brake Co. It is designed for mounting on a Le Roi Tractair, a combination compressor - tractor, and can also be used for dust-free drilling in street undersealing and mud-jacking operations, or parking meter installations. For additional information, write to SALES PROMOTION DEPT., LE ROI DIVISION, WESTINGHOUSE AIR BRAKE CO., MILWAUKEE 1, WIS., or use the Post Card on Page 54. Circle No. 920.

The usual cloud of abrasive dust resulting from drilling through concrete is eliminated by this new Le Roi dust collecting unit.

Pressure Sensitive Pavement Markers

As traffic congestion increases, highway departments have redoubled efforts to find an improvement over paint for pavement marking. A tough vinyl-type material with pressure sensitive backing is now offered for highway and floor marking. One person can apply it without brushes, tools or special machines. No barricades or drying time necessary, and color durability is said to be outstanding. It is so thin that it actually becomes a part of the pavement and avoids snow plow and vehicle scuffing.

Made in bright white or yellow, Mactac is available in standard rectangular strips, sheets or rolls. For full particulars, write MORGAN ADHESIVES CO., MACTAC DIVISION, 4560 DARROW RD., STOW, OHIO, or use the Post Card on Page 54. Circle No. 921.

All-Aluminum Rest Station

Just one item in a group of structures now being offered by Alcoa for park and road-side table areas, this aluminum rest station is available in two models: one measures 6½′ square; the other, 6½′ x 5½′ square. Both stand 7⅜′ high, with a 1-foot pitch of the roof to

NCG® wherever emergency strikes...

*Handy** Resuscitators automatically breathe when the breath of life is gone.

The Handy Resuscitator does *three* important things:

1. It automatically inhales and exhales, adjusting automatically the depth of respiration to the patient's lung capacity, for an adult, child or even *infant.*
2. It can be quickly switched to "Inhalation" to supply oxygen to be absorbed by the spontaneous respiration of the patient.
3. It provides sufficient suction as an Aspirator to remove obstructing material from the throat, such as water, mucus, etc.

"BE PREPARED" for drownings, carbon monoxide poisonings, heart attacks, electric shock, strangulation, asthma, asphyxia of the new-born.

Additional information available See Page 957, Municipal Index-1960

NATIONAL CYLINDER GAS
DIVISION OF CHEMETRON CORPORATION
840 North Michigan Avenue, Dept. M-10D
Chicago 11, Illinois

CHEMETRON

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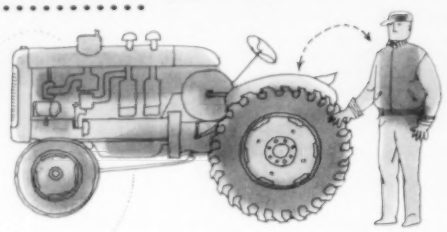
Save time! Cut costs!
SCHRAMM COMPRESSOR/TRACTOR DRIVES AIR TO JOBS . . . AND ALONG WITH JOBS

1 Schramm Pneumatractor combines



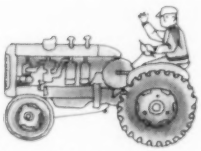
this 125 cfm compressor on a husky unit that doubles as a tractor

one man drives... operates air tools, too

2 compressor travels

all around town

from job to job



under its own power

3 you stop

towing (no more trucks, crews tied up)

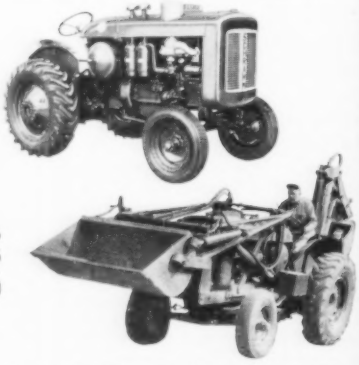
pushing (and the cost each time they push)

lost time (while men wait for compressor)

YET YOU PAY LESS for a hard-working 2-in-1 Schramm 125 cfm Pneumatractor than for most anyone else's portable compressor alone!

cost competitive diesel portable 125 . . $5,945
cost Schramm Diesel Pneumatractor . . $5,725
Savings . . $ 220

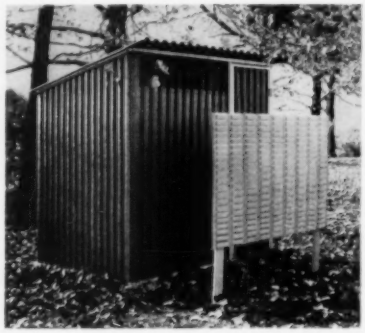
Write for full information. And see your nearest Schramm Dealer listed in the Yellow Pages.



Save with Schramm Heavy Pneumatractor, too! 125 cfm Compressor/Tractor with back hoe and front end loader.

Schramm PNEUMATRACTORS
Self-propelled Air Compressors
603 North Garfield Ave., West Chester, Pa.

Purchasing



This all-aluminum rest station has an "Autumn Brown" finish, a baked enamel coating that incorporates aluminum pigments for added luster.

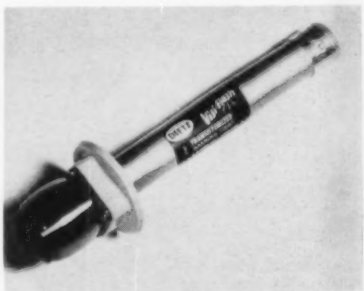
the rear. Both are adaptable to any type plumbing. Daylight illumination is provided by inserts of green plastic under the eaves.

Ribbed aluminum sheet is used throughout for siding, roofing and doors, and to help the buildings blend into the landscape a coarse bark pattern is rolled into the sheet. A special fence acts as a vision barrier in front of the small station.

Alcoa also offers an aluminum picnic shelter, which uses ribbed roofing and structural aluminum posts. It measures 12′ in width and nearly 20′ in length. Head clearance is 6¾′. For additional information on these structures, write ALUMINUM COMPANY OF AMERICA, 720 ALCOA BLDG., PITTSBURGH 19, PA., or use the Post Card on Page 54. Circle No. 922.

Improves Nighttime Use of Traffic Cones

The Dietz No. 630 Visi-Flash transistorized warning light is as easy to place and put into action as a traffic cone. It produces a beam of approximately 6 candle power through a red or amber plastic 360-



Traffic cones become more effective nighttime traffic aids when assisted by these transistorized warning flashers.

degree lens; the light has a signal duration strength of 400 hours. Flash lasts one-tenth of a second and pulsates 65 times per minute.

The light uses four flashlight "D" cells and a General Electric No. 1850 bulb.

For further information, write R. E. DIETZ CO., 225 WILKINSON ST., SYRACUSE 1, N. Y., or use the Post Card on Page 54. Circle No. 923.

Curved Stencilling on United Round Top

United Metal Cabinet has developed a special stencil rack to permit the printing of illustrations and printed messages on curved surfaces. Now any message or line art work can be affixed to the United Round Top waste receptacle. Formerly stencilled messages could be applied only to flat surfaced receptacles, such as United's Swing Top. Catalog, specifications and colors can be obtained from UNITED METAL CABINET CORP., 8 E. 36TH ST., NEW YORK, N. Y., or by using the Post Card on Page 54. Circle No. 924.

Imaginative Playground Equipment

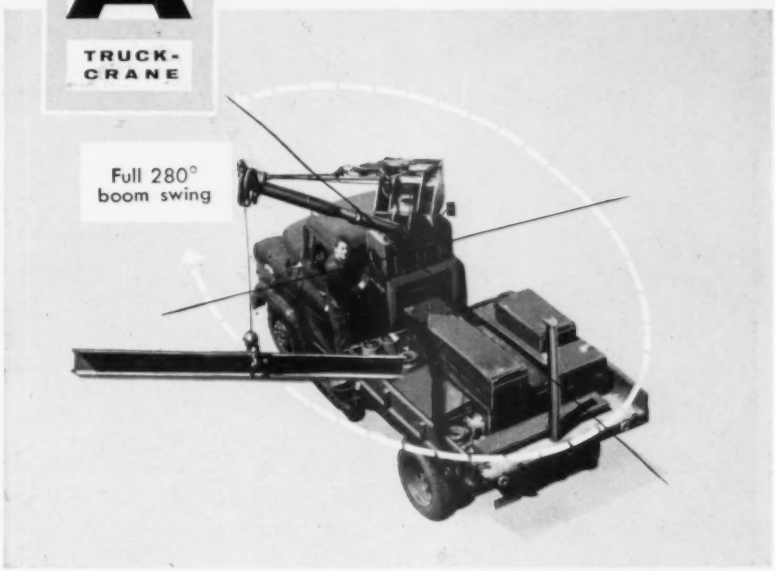
Colorful, appealing birds and animals for youngsters to "ride" upon are new products announced by Game-time, Inc. Called Saddle-Mates, and designed for children from two to ten years of age, they include circus and nursery-land favorites.

Tough fiberglass construction enables them to withstand weather,

Saddle-Mates appeal to children, make attractive installations for tot lots, park and school playgrounds.

ANTHONY TRUCK-CRANE

the quality leader in Truck-Cranes



The Crane that's built into your truck!

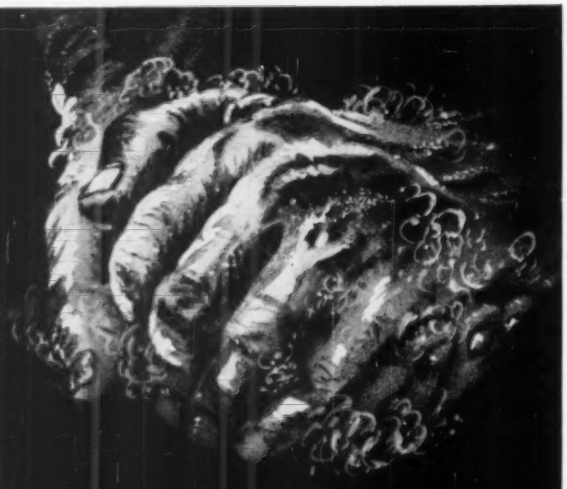
Take your crane with you *right along with the load!* Why tie up another specialized rig when the Anthony Truck-Crane does it better . . . travels with your truck. Lift 2½ times as much as most end loaders! Make your truck self-loading – and self-unloading. Do many jobs formerly done by larger, more expensive cranes – and do them better. Tell your Anthony distributor you're ready for that demonstration . . . now! Anthony Company, Streator, Illinois.

HYDRAULICALLY PROJECTED BOOM FOR ACCURATE SPOT LOADING

Unmatched compactness—requires only 18" mounting space • 100% hydraulic operation—for smooth, effortless power • Full 280° boom swing for flexibility • Choice of booms.

ANTHONY

use your foot to wash your hands



● A touch on the Bradley Foot-Control and you have a clean spray of tempered water for the best wash-up you've ever experienced! No soiled hot and cold faucets to touch. No dirty bowl because the Bradley rinses itself clean when it's used.
Yes, this is the Ultimate in washing pleasure, convenience, speed, sanitation and in modern good looks.
Bradleys are available in six beautiful colors, in any combination of these colors, and in stainless steel. Bradleys are ideal for today's schools, institutions, office buildings, plants and are already in use in many of the finest!
BRADLEY WASHFOUNTAIN CO.
2333 West Michigan St.
Milwaukee 1, Wis.

Write for colorful new Bradley Bulletin K 1204

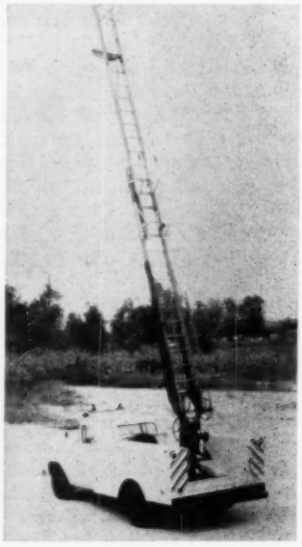
Bradley
BRADLEY
washfountains

Purchasing

hard use and long wear. Their colorful finishes are special Epoxy resin coatings. Saddle-Mates are mounted on sturdy steel springs with steel mounting plates. Models are available with either portable no-tip bases, or without base for permanent installation in cement. Springs are specially designed to provide a delightful rocking motion, yet avoid pinching curious fingers.

For descriptive literature and detailed specifications, write GAME-TIME, INC., LITCHFIELD, MICH., or use the Post Card on Page 56. Circle No. 925.

Revolving Aerial Ladder



A new revolving aerial ladder saves time on overhead work by reaching jobs quickly, easily and safely. Elevation is by a displacement-type hydraulic cylinder powered by an electric motor-driven pump—no power takeoff is required. The ladder is lowered by gravity. A handwheel rotates the ladder 360 degrees in either direction, and the ladder is automatically locked in the position to which it is returned.

The ladder can be installed on standard or custom-made bodies in the Powers-American line or by the purchaser on a body in use. Descriptive literature on the Series HLE revolving aerial ladder can be obtained by writing to POWERS-AMERICAN DIVISION OF MCCABE-POWERS BODY CO., 5900 N. BROADWAY, ST. LOUIS 15, MO., or by using the Post Card on Page 56. Circle No. 926.

A Microfilm Station

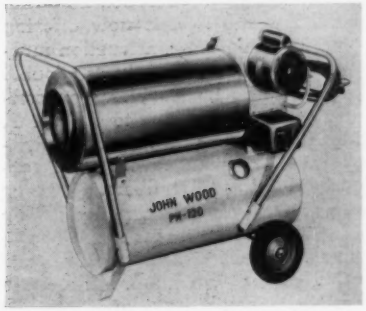
A microfilm plan that combines a camera, film, Universal Processor, Uni-Kards, and reader is being offered for $7,295. The camera is a power-driven, 9-position, planetary unit which microfilms large engineering drawings. Document sizes range from 15″ x 21″ at a 12-time reduction, up to 36″ x 47″ at 29 times.

There is enough film—100-foot rolls on daylight loading spools—to microfilm over 5,000 documents. Clear, high quality images are produced at lowest cost possible. For literature giving full facts, write REMINGTON RAND, 315 PARK AVE. S., NEW YORK 10, N. Y., request (F-574), or use the Post Card on Page 54. Circle No. 899.

New Portable Heater

John Wood's portable heater, Model 120, is designed for use in heating buildings under construction, portable heating for plumbing and heating roughing in or repair jobs, curing and drying concrete, warming, drying and thawing materials. It needs no vent and is equipped with a fold-back stainless steel combustion chamber to assure complete combustion and eliminate odor, smoke and visible flame.

The unit rolls on large wheels to any area where heat is required. It burns kerosene, #1 or #2 diesel or fuel oil. A Sirocco-type blower provides positive air flow. The Model 120 weighs 140 pounds and



With a heated air output of 450 cubic feet per minute, Model 120 can be operated continuously for up to 16 hours.

Protect Revenue With

Allocated*
METAL FARE TOKENS
For Transportation and Parking

Ideal for multi-fare and fractional fare systems. Attract riders. Speed fare handling. Eliminate change-making delays. Assure accurate sorting, counting and wrapping by maintenance of identical size. An investment . . . not an expense, for they wear indefinitely.

* Allocated . . . an exclusive M & W method of manufacturing metal fare tokens individually designed for each customer. Perforations and lettering are in the same relative aligned position on every token which makes them identical, thus protecting against duplication. This is especially important with no Federal law protection.

Parking Tokens a Specialty!

TRANSPORTATION DIVISION

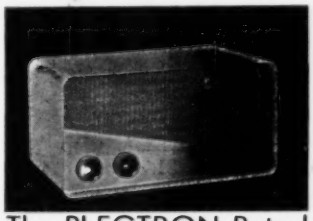
MEYER & WENTHE, Inc.

30 S. Jefferson St., Chicago 6, Illinois
Established in 1854

LISTEN!!--

If you want to increase the efficiency of your department by being in constant touch with your radio equipped vehicles,

YOU NEED



The PLECTRON Patrol

HIGH FREQUENCY F. M. RADIO RECEIVER
Receiver is crystal controlled and available on any frequency in the 25-54 or 152-174 megacycles bands.

In use by city officials everywhere for listening to all messages sent and received by their 2-way radio equipped vehicles.

★ FULLY TRANSFORMER POWERED
★ CRYSTAL CONTROLLED FREQUENCY
★ LONG RANGE RECEPTION (up to 25 miles without outdoor antenna)
★ COMPACTLY BUILT IN ONE ATTRACTIVE METAL CASE
★ LOW COST: $79.50 Prepaid. cash with order

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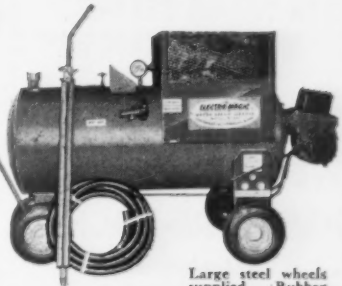
For Complete Information Please Write Dept. ACM-2

Plectron Corporation
OVERTON, NEBRASKA

BLAST IT CLEAN WITH
HIGH PRESSURE STEAM!

Electro-Magic
MOTOR STEAM CLEANER

Sells for ONLY
$329.00
FOB Factory



Large steel wheels supplied. Rubber tires extra.

Ideal for hundreds of municipal cleaning jobs.

Blast dirt, grease and grime from motorized equipment, elevator shafts, walls and floors.

Handles almost any difficult cleaning job. Saves time and money.

UP TO 100 LBS. of Steam Pressure All Day Long.
FULLY AUTOMATIC . . . Just Push a Button and You Have Steam.
PAYS FOR ITSELF. One Unskilled Laborer Can Operate.
OIL FIRED . . . Burns Clean. Ideal for Inside Work.
OVER 20,000 Electro - Magics now in use. Guaranteed for Life.
HOT WATER Rinse Attachment on every Electro-Magic.

DEALERS Wanted - Write Today
Make Up To $500 Per Week

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ELECTRO-MAGIC MOTOR STEAM CLEANER
☐ Please rush additional information.
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☐ I am interested in dealership.
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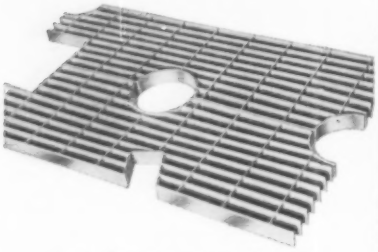
SOLVE YOUR GRATING PUZZLE



Every shipment of IRVICO grating is carefully checked and inspected to see that cutouts and sizes of panels are exactly in accordance with approved drawings.

When the job is delivered to you, the panels will fit into place easily and quickly, even where the application must be made like a jig-saw puzzle.

For more than half a century, the name Irving has meant grating fabrication under the rigid discipline of quality standards. Every job is treated individually, with considerable attention given to exact fit.

specify IRVICO

and you'll get

"A FITTING GRATING for EVERY PURPOSE!"

★

RIVETED

WELDED

PRESSURE-LOCKED

in steel, aluminum and other metals.

Catalog on request

IRVICO®

IRVING SUBWAY GRATING CO., Inc.

Originators of The Grating Industry Est. 1902

Offices and Plants at:
1530 27th St., Long Island City 1, N. Y.
1830 10th St., Oakland 20, California

Purchasing News

can produce 120,000 BTU's per hour. Its ⅛-hp motor takes 115 volts of 60-cycle AC current.

For additional information, write the ADVERTISING DEPT., JOHN WOOD CO., HEATER AND TANK DIVISION, CONSHOHOCKEN, PA., or use the Post Card on Page 54. Circle No. 927.

Eureka to Market Dacron Fire Hose

Eureka Fire Hose Division of United States Rubber Co., 1 Market St., Passaic, N. J., is now offering both its exclusive construction multiple-woven hose and its double jacketed line in 100% Dacron construction. According to Robert P. McCulloch, sales manager, this completes the changeover from organic to synthetic fibers. Among the advantages of Dacron, cited by Mr. McCulloch, are its resistance to abrasion, chemicals, mildew and other destructive fungi, lightness in weight, flexibility and tensile strength.

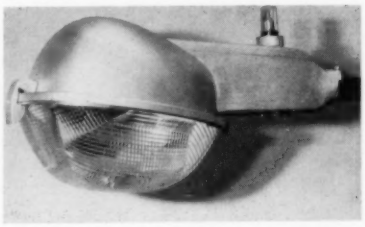
Eureka's double jacketed hose is marketed under the name Super Safety, its multiple-woven hose under the name Super Paragon. Both lines are offered in diameters from 1½" to 6", in lengths of 50', 75', and 100', able to withstand pressures up to 600 psi.

Waste Receptacle with "Built-In" Spray Sanitizer

This smooth, foot-operated receptacle closes noiselessly after each use. It has a rust-proof Epon-coated removable liner that is stain-proof and impervious to most chemicals and alkalis. Woodlets, Inc. has trade-named it AIR*SAN, and equipped it with an "Ozium" sanitizing spray dispenser that eliminates unwanted odors with push-button speed. The user merely presses the button on top of the recepticle's chrome lid to release a measured amount of spray onto the contents.

AIR*SAN is trimly designed and is finished in white with chrome top or new Silvertone. It measures 11½" x 11" x 19" and is suitable for use in public washrooms, schools, rest rooms, hospitals. For catalog sheets and price lists, write WOODLETS, INC., 2048 NIAGARA ST., BUFFALO 7, N. Y., or use the Post Card on Page 54. Circle No. 928.

Modern Mercury Lighting



Mercury luminaires are now available with built-in ballast, making them self-contained, easy to handle and install. Shown here is a Pemco 400-watt luminaire with built-in ballast and Holophane refractor. For specifications and construction details, request *Bulletin* 124 from PHILADELPHIA ELECTRICAL & MANUFACTURING CO., 1200-36 N. 31ST. ST., PHILADELPHIA 21, PA., or use the Post Card on Page 54. Circle No. 930.

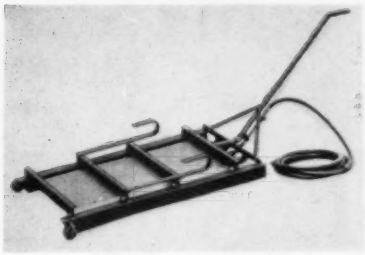
Lark Rescue Wagon

This specially-equipped 1960 Lark V-8 station wagon is equipped with approximately $1,700 of rescue equipment — portable resuscitator, ambulance cot, public address system, fire extinguishers, prying bars, 300 feet of manila rope, asbestos fire suits, smoke and regular gas masks, two-way radio. Seats, equipment storage spaces and braces were specially designed by Studebaker-Packard engineers.

The rescue wagon was presented to the South Bend, Ind. Sheriff's Department by the Northern Indiana Motor Carriers Association and Teamsters Local No. 364. It is believed to be the first of its kind in the country. For additional information, write STUDEBAKER-PACKARD CORP., SOUTH BEND 27, IND., or use the Post Card on Page 54. Circle No. 929.

Purchasing

New Portable Asphalt Surface Heater



This surface heater produces highly concentrated heat in a small area to quickly heat asphalt to a workable consistency. It has been developed for the repair and removal of asphalt bumps and push-ups, removal of traffic lane lines and for drying pot holes prior to patching. It is operated by one man, is fired by LP gas, and comes equipped with hooks for hanging on the tailgate of a truck. Two models are available.

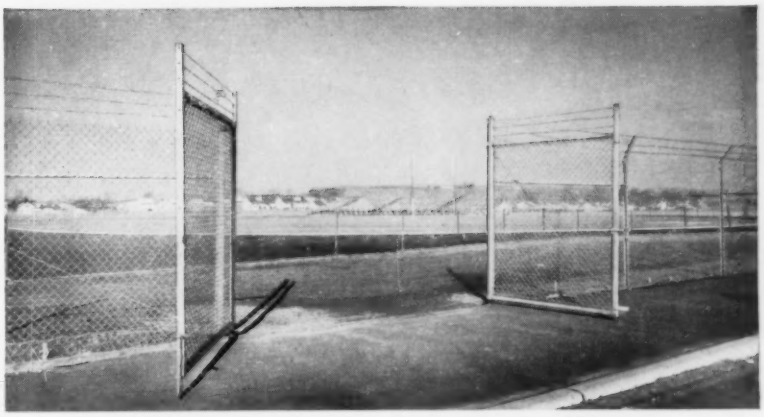
For complete information, write ESSICK MANUFACTURING CO., 1950 SOUTH SANTA FE AVE., LOS ANGELES 21, CALIF., or use the Post Card on Page 54. Circle No. 935.

Heated Compaction Roller

Latest product to roll from The Charles Machine Works' production line is the 'Hot Witch' roller. This small asphalt paving, patching device delivers compaction equal to five tons dead weight and uses the principle of heat in applying both cold and hot mix patches.

It consists of a heavy roller inside which is a propane-fired heater capable of heating the roller to a temperature of 800°F in four min-

Hand-propelled 'Hot Witch' smooths patch spots, seals the surface, bonds the patch to surrounding area.



". . . withstands abuse and spectator 'enthusiasm' . . ."

Union High School Memorial Field, Union, New Jersey

"Our Anchor Fence has eliminated many of our athletic program headaches. Naturally, with a strong fence and gates, we can prevent 'gate crashing' and keep equipment from being taken off the field. We can protect the turf and cinder track between games—cutting maintenance time. But more important, our Anchor Fence keeps youngsters from playing in the stands, eliminating chances of injury. And during game time, the fence withstands abuse and spectator 'enthusiasm' beautifully."

Call your local Anchor office today for a talk with one of Anchor's trained sales engineers. Write for free catalogue to: ANCHOR FENCE, 6562 Eastern Ave., Balto. 24, Md.

ANCHOR FENCE
Division of ANCHOR POST PRODUCTS, INC.

Plants in: Baltimore, Md.; Houston, Texas; Whittier, Cal. • Sold direct from factory branches in principal cities.

FREE TELKEE booklet answers that question for you; shows how TELKEE saves you time and money, gives you new convenience.

STOPS time wasted locating lost or borrowed keys

MINIMIZES expensive lock replacement and repairs

ORGANIZES all your keys in one orderly system

What's more, TELKEE guarantees maximum security and privacy—keeps keys in authorized hands, always.

Offices, factories, stores, schools, housing, hospitals . . . there's a TELKEE System to fit every size and type of application. TELKEE solves every key problem, efficiently, inexpensively.

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The MOORE KEY CONTROL® System

P. O. Moore, Inc., Glen Riddle 25, Pa.
Send FREE TELKEE booklet

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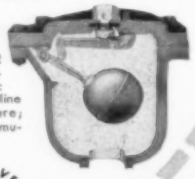
AIR VALVES

. . . keep pipelines open for safe, economical operation

Simplified construction, easy accessibility, maximum durability and efficient cost-saving operation are *basic* in every Crispin Air Valve.

Crispin UNIVERSAL AIR VALVES . . . positive, full-time air control when line is filled, in operation or emptied.

Crispin AIR & VACUUM VALVES . . . permit air to escape as line fills, allow air to enter as line empties.



Crispin PRESSURE AIR VALVES . . . provide automatic air escape while line is under pressure; prevent air accumulation in line.

AIR CONTROL VALVES FOR OVER 45 YEARS

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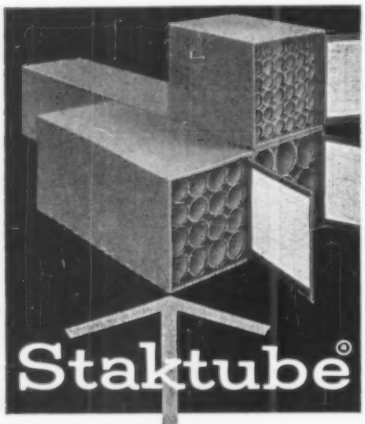
MANUFACTURING COMPANY

BERWICK, PENNSYLVANIA

Dept. E

Write, wire or phone for complete information on dependable Crispin Air Valves that keep your pipelines open for safe, economical operation.



Stacor's lifetime steel ROLL FILE SYSTEM

"Easy-file easy-find" system to keep rolled prints, plans, maps clean, safe. 32 sizes—8 lengths, 4 tube diameters.

Send NOW for illustrated catalog

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Send For Your FREE Catalog

SARGENT-SOWELL, INC.

P. O. BOX 810 • GRAND PRAIRIE, TEXAS

Purchasing

utes. A 20-pound bottle of propane mounted on top of the machine provides 6 to 8 hours' fuel for heating the roller.

Municipal street repair and maintenance crews will find that the 'Hot Witch' works rapidly and well, and is an especially handy tool for winter patching. For additional information, write WITCH MARKETING CO., 1959 W. FIR AVE., PERRY, OKLA., or use the Post Card on Page 54. Circle No. 901.

Hopto Redesigns Snap-Mount Backhoe

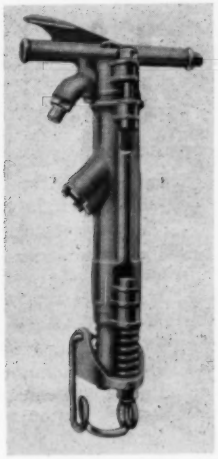
Two basic changes are announced in the redesigned Model 110 Hopto snap-mount backhoe. One is that the operator now sits over the unit, rather than behind it. The seat swivels or pivots with the action of the boom for better control and improved visibility. The second major change is an improved and more rugged swing mechanism with two double-acting swing cylinders.

For further information on these and other features, write the BADGER DIVISION of THE WARNER & SWASEY CO., EXCHANGE BLDG., 4TH and CENTER ST., WINONA, MINN., or use the Post Card on Page 54. Circle No. 904.

New Demolition Tool Is Hard-Hitting, Lightweight

The Davey-Holman Model SS-44 is a new light-duty paving breaker suitable for all types of demolition work. It is reported to meet the demand for a hard-hitting tool for general street repair and to be especially effective for "awkward" jobs.

Features include extra large alloy steel front head, bolts and springs that can withstand severe punishment. Honed cylinder bore is said to increase tool life as does reversible piston hammer. Metered throt-



tle valve responds readily to operator's touch and is ideal for starting and running.

The SS-44 weighs 48 pounds, is 22¾" long, 12" wide. For complete details, ask for *Bulletin* E-279. Write DAVEY COMPRESSOR CO., KENT, OHIO, or use the Post Card on Page 54. Circle No. 902.

One-Man-Operated Trencher Is Self-Propelled

Arps Corp. announces the Model MA-2 Trench Devil, developed for those needing a low-cost, heavy-duty trencher for such jobs as water services, foundations, street lighting, signal and sprinkler systems, and gas lines.

The 1,080-pound machine offers five digging widths, from 2¾"

A Sound Investment

Surfacing Play Areas With Walk-Top Pays Off!

Walk-Top (a factory-compounded asphaltic product):

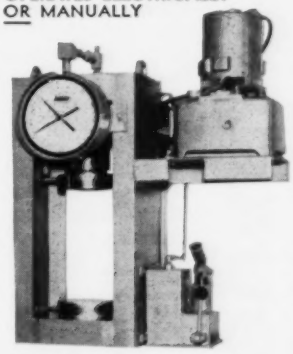
- reduces danger of playground accidents
- minimizes wear on clothing, equipment
- lowers expense of building maintenance
- increases life and service of playground

Write for full details.

American Bitumuls & Asphalt Company
320 Market St., San Francisco 20, Calif.

FORNEY
JOB-SITE CONCRETE TESTER FT 20-E

- CONFORMS TO ASTM STANDARDS
- OPERATES ELECTRICALLY OR MANUALLY



- PERMANENTLY MOUNTED ELECTRIC PUMP
- 250,000 LB. LOAD RATING FOR CYLINDERS, CORES, BLOCKS, BEAMS, CUBES, BRICK AND DRAIN TILES

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...AND THE WORLD OVER

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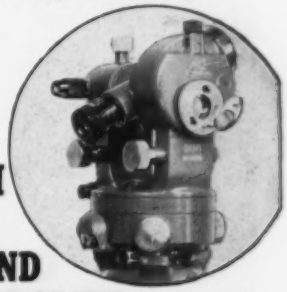
SURVEYING INSTRUMENTS

*The Bridge Division of the State of Texas Highway Dept. uses Kern Instruments

WORLD FAMOUS FOR
Working Speed
Operational Simplicity
Accuracy & Economy



DKMI TEN SECOND THEODOLITE (*with optical micrometer*)

- Exceptional portability and precision.
- Readings automatically ... AT A GLANCE.
- Direct reading to 10". Estimation to 1". Average working accuracy —3-4 secs.
- Can be used with electric lighting unit for night work.

KERN CENTERING TRIPOD

Unique—a Kern first! Centers instruments in seconds with remarkable accuracy. Assures exceptional stability with ball-and-socket head, supporting instrument coupling.

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Write for Brochure DK 518-10
PROMPT, RELIABLE SERVICE
FACTORY TRAINED PERSONNEL

Kern SWISS — *The FINEST in SURVEYING EQUIPMENT*

KERN INSTRUMENTS INC.
120 Grand St., White Plains, N.Y.

"More or Less"
THE BEST
DITCH WITCH
TRENCHER
Other trenchers cost "More or Less"
Other trenchers dig "More or Less"
BUT DITCH WITCH PRODUCES MORE TRENCH FOR LESS MONEY
Model M-322 Pictured
TRENCH SIZES FOR 4 MODELS:
16" K-1 30 HP
12" M-322 12 HP
10" 8" M-3 9 HP
6" 4" 3" C-3 7 HP
Trenching Speeds 1½ to 12 FPM
USE FOR:
• Utility Services
• Gathering Lines
• Signal Lines
• Sewer Laterals
• Road Crossings
• Sprinklers
• Footings, etc.
CHARLES Machine Works, Inc.
603 Birch St. • Perry, Okla.
To Locate Distributor, Look Under "Contractors Equipment" in 1960 Metropolitan Telephone Directory Yellow Pages for Ditch Witch Trademark; or Call Collect FE 6-4404, Perry, Okla.

Purchasing News

through 8" and up to 54" deep. Digging speed is variable from 0 to 1,200 feet per hour in either direction. A new depth marker accounts for fast, accurate trenching.

One side dirt delivery is accomplished by a reversible rubber-belted conveyor which can be changed to either side within 60 seconds. One crumber can be used for 2½, 3½, and 4½ foot booms.

For additional information, write ARPS CORP., NEW HOLSTEIN, WIS., or use the Post Card on Page 54. Circle No. 913.

Traffic Master

Designed for Police Work

The 3-wheel "Traffic-Master" is ideally suited to traffic and general police work. It achieves speeds up to 45 mph, has a 96-inch turning radius, heavy-duty two-cylinder, 4-cycle air-cooled engine, centrifugal clutch and 3-speed transmission. Its fiberglass cab comes equipped with safety plate windshield, and there's a step on rear for extra patrolman to ride. Other features include hydraulic brakes on all three wheels, mechanical safety parking brake, 100 ampere-hour, 6-volt battery and automotive differential.

"Traffic-Master" is one of the major vehicles in the line of municipal, industrial, resort and golf cars produced by West Coast Machinery Inc., of Stockton, Calif., just acquired by the INGERSOLL KALAMAZOO DIVISION of BORG-WARNER CORP., 1810 N. PITCHER ST., KALAMAZOO, MICH. For additional information, write Ingersoll Kalamazoo, or use the Post Card on Page 54. Circle No. 916.

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LOOP HOTEL ROOMS anytime to PREFERRED GUESTS *
* During certain convention periods, all available Chicago hotel rooms are frequently taken. The Hamilton guarantees (with advance notice) reservations anytime of the year to you, the preferred guest. Ask for your "Preferred Guest Card", today . . . at no obligation. Free year 'round air conditioning, radio & T.V.
Rates from $5
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20 SOUTH DEARBORN
Preferred by guests in
CHICAGO
IN KANSAS CITY IT'S THE BELLERIVE HOTEL
100% AIR-CONDITIONED

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TUBELESS IS RUGGED!
OPERATES AT 120 VOLTS.
WILL NOT BURN OUT IF ACCIDENTALLY PLUGGED INTO 240 VOLTS!
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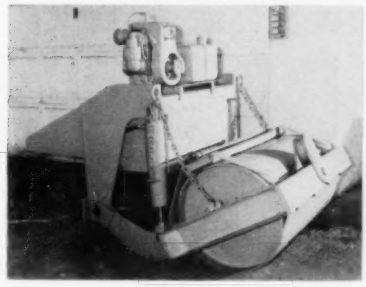
GraderrolleR with Gasoline Engine



Model GR-42HG is the designation for the new Martin Co. GraderrolleR, which features an independent gasoline engine to power the 1500 psi hydraulic system.

GraderrolleR is a general use road surfacing roller that attaches to the rear of motor graders. Previous models were belt-driven and designed exclusively for Caterpillar motor graders. Use of the engine allows the GraderrolleR to be adapted to any make motor grader with only inexpensive modifications for mounting.

Raised and lowered hydraulically, the Martin GraderrolleR uses the weight of the grader to exert up to 225 pounds of compaction per linear inch of its 42-inch-wide roller. The roller is pivoted at the center and follows the road surface regardless of the grader's position during operations. Model GR-42HG handles any compacting-rolling job on new or older road construction and maintenance.

For additional information, write MARTIN COMPANY, 620 ANDREWS AVE., KEWANEE, ILL., or use the Post Card on Page 54. Circle No. 906.

Cleans and Deburrs Copper Tubing

Toled-O-Matic No. 1 Buff-Ezy is the designation for a new cleaning and deburring machine for copper tubing (up to 4″) and fittings, announced by The Toledo Pipe Threading Machine Co.

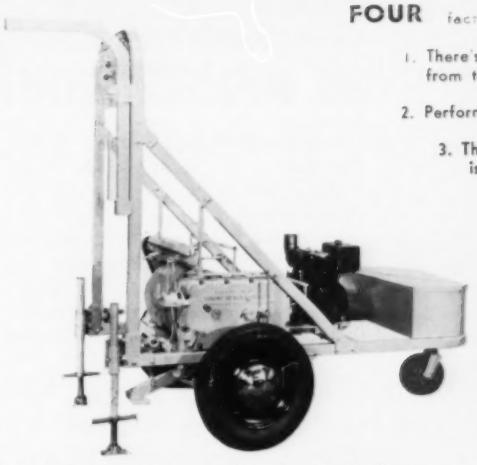
The machine's 4″ main brush, with adjustable "reverse L" guide, handles all external cleaning operations. For internal cleaning and deburring, three sizes of brushes and a rotary internal deburring tool work off the other end of the motor shaft under a clear plastic protective guard.

Though completely portable, the

TURCO

MAXI-POWER Sewer Cleaning Unit

Note the STIFF LEGS—quickly adjustable to compensate for uneven ground.



Sewer Cleaning Brushes, Buckets, Ferrets, Flushing Bags, Rods, carried in stock for immediate delivery

ONE unit consists of:

TWO machines, located at the ends of the sewer section to be cleaned.

TWO models (501 and 502) each with 3-speed transmission, enable you to get the exact power and line speed you need:

	1st gear	2d gear	3d gear
#501	11000 lbs.	9000 lbs.	7000 lbs.
#502	15000 lbs.	12000 lbs.	9000 lbs.

FOUR facts to consider:

1. There's a unit exactly right for any city, from the largest to the smallest.
2. Performance is easy, quick, thorough.
3. The original full flow of the sewer is restored.
4. Each part is designed and engineered for long life.

Write for catalog

Turbine Sewer Machine Company

Division of

Chas. H. Stehling Co.

1303 North Fourth St.

Milwaukee 12, Wis.

Faster LOCATING!

LOWER SERVICE COSTS with the improved AQUA VALVE BOX **LOCATOR!**

$32.50 F.O.B. Cin., Ohio

Your Name In Gold FREE!

STOCK this useful tool for every service CAR and CALL • Speed • Locating • Keep Customers Happy

- **NO WIRES, BATTERIES or SWITCHES**—simple, powerful magnetic action, factory adjusted to YOUR geographical location assures unfailing results!
- **NO NEEDLE SPINNING**—exclusive electric braking action saves you time!
- **NO STOOPING**—easy top-view reading!
- **RUGGED**—compact, accurate, convenient!
- **GUARANTEED**—to function regardless of weather, surface or ground cover!
- **NATION'S MOST WIDELY USED LOCATOR!**
- **15-DAY FREE TRIAL**—No money! No obligation! You be the judge!

ORDER NOW - Wire or Call Kirby 1-4200 collect

AQUA SURVEY & INSTRUMENT CO.

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THE *RECREATION* LINE

WHEREVER CHILDREN PLAY *Safely!*

Recreation equipment with engineered safety to meet the most rigid requirements.

- **Playground Equipment**
- **Indoor Basketball Backstops**
- **Swimming Pool Equipment**

Literature for each line available on request—please specify.

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RECREATION EQUIPMENT CORP

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Anderson, Indiana

Re-new your structures with GUNITE!

★ durability
★ economy
★ flexibility

- DAMS
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- GRAIN ELEVATORS
- BREAKWATERS
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- FILTER PLANTS
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- SEWERS
- STACKS
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estimates, specifications and surveys made free of cost to you. write, wire or call MElrose 4-8120

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ENGINEERING—CONSTRUCTION

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Gentlemen: Please have a representative contact me. I am interested in:
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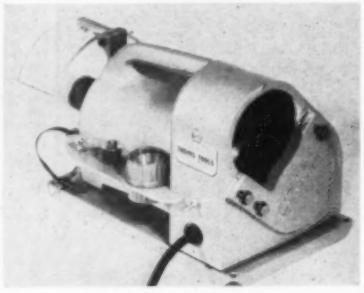
Purchasing



No. 1 Buff-Ezy

52-pound unit is provided with a heavy metal base plate for bench mounting. A ⅓-hp single-phase motor operates on 115-volt, AC 60-cycle current.

No. 1 Buff-Ezy also is useful for cleaning threaded fitting and internal threads of valves. Its established price is $128.50. For complete information, write THE TOLEDO PIPE THREADING MACHINE CO., TOLEDO, OHIO, or use the Post Card on Page 54. Circle No. 912.

Purchasing News Briefs

• purchase of snow plow division of Bros, Inc. by **The Eska Co., Inc.**, Dubuque, Ia., includes trade-marks, good will and foreign and domestic distribution. Products involved are the 20" and 26" Sno-Flyr, self-propelled rotary snow plows.

• new manufacturing plant being occupied by **Gordon Smith & Company, Inc.**, of Bowling Green, Ky., is on the Louisville Highway just north of the Bowling Green city limits.

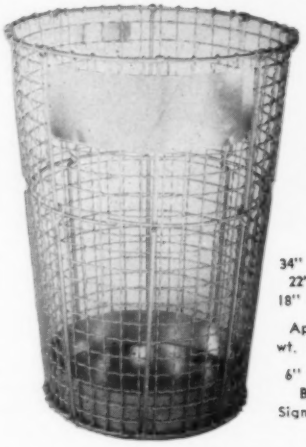
• eastern area headquarters for sales and service of public safety and industrial communications products has been established at Fair Lawn, N. J., by **Motorola Communications & Electronics, Inc.**

• dealer to the trade in the Chicago area for **P. K. Lindsay Company, Inc.**, Everett, Mass., is Industrial Engine & Parts, 2345 S. Pulaski Road, Chicago 23, Ill.

• $250,000 expansion program under way at **Smith & Loveless** division of Union Tank Car Co. manufacturing plant near Lenexa, Kan., includes a new office building to house executive and general of-

LET THE PUBLIC *keep your* STREETS and PARKS CLEAN . . .

USE NORWICH STREET AND PARK BASKETS



34" Deep
22" Top
18" Bottom

Approx. wt. 43 lbs.

6" x 16" Blank Sign Plate.

HOT DIP GALVANIZED AFTER FABRICATION

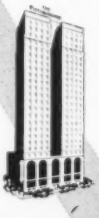
Shipped from stock in any quantity

Call or Write

NORWICH WIRE WORKS, INC.

159 STATE STREET, NORWICH, N. Y.

Your Choice for Convenience in PITTSBURGH



Hotel Pittsburgher

Right in the heart of the Golden Triangle 400 outside rooms with TV and every comfort of modern hotel design. General Forbes Lounge and Dining Room . . . Air Conditioning. Airport Limousine and Taxi Service.

Forbes Avenue Below Grant

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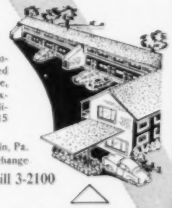


Jacktown Motor Hotel

The very finest accommodations. 60 air-conditioned rooms with TV, telephone, combination tile baths. Excellent dining room. Facilities for group parties 15 to 500.

Route 30 Irwin, Pa.
1 mile West of Irwin Interchange

UNderhill 3-2100

Hotel Pittsburgher Motel

KNOTT HOTELS

Opposite Greater Pittsburgh Airport on beautiful Airport Parkway West. 56 luxurious air-conditioned rooms with tile bath, TV, private phone. Courtesy car to and from airport.

AMherst 4-5152

Joseph F. Duddy, Gen. Mgr.

*Teletype Service. For immediate confirmation of reservations at no charge . . telephone any Knott Hotel - or teletype PG-29.

Purchasing

fices and an addition to the front of the present manufacturing plant.

• new offices of **Leonard S. Wegman Co., Engineers,** are at 235 E. 45th St., New York 17, N. Y.

• signing of an exclusive marketing agreement with Crane Carrier Corp. of Tulsa, Okla., granting rights to market carriers for the concrete industry is announced by **Chain Belt Co.,** Milwaukee, Wis. Carriers will be marketed as a Rex Mixer-Master line, reports W. C. Messinger, vice president of Chain Belt's construction machinery section.

• terminating its former sales representative agreement in the Northwest, **The Foxboro Co.,** Foxboro, Mass., has opened two new company - staffed offices — one in Portland, Ore. and the other in Seattle, Wash.—to offer direct undivided application engineering assistance to instrument users.

• new distributor in the New York City trading area, northern counties of New Jersey and the State of Connecticut, for **D. W. Onan & Sons, Inc.,** Minneapolis, Minn., is the Onan Eastern Corp, 21-34 Broadway, Long Island City 6, N. Y.

• reduction in price of Cycolac LL ABS plastic resin for pipe of 9 cents per pound is announced by **Marbon Chemical** division of Borg-Warner, Washington, W. Va.

James B. Cook, Jr. (right) is sworn in as Assistant Director for Mobilization Planning of the Water and Sewerage Industry and Utilities Division, Business and Defense Services Administration, U. S. Department of Commerce, by BDSA Administrator William A. White, Sr. Walter L. Picton, Director of the Division, is in the center.

MOSQUITOES
FLIES
AND OTHER
INSECT PESTS
DESTROYED ON CONTACT

TIFA

TODD INSECTICIDAL FOG APPLICATOR

NOW Suitable for Operation on Propane or Gasoline

Lowest-Cost Space Control throughout the community. Peak performance against all insect pests . . . on the dump, over pools, in suburbs, play areas, everywhere insects swarm. Best by test for over 15 years, TIFA sets the records for lowest operating and maintenance costs in 5000 communities throughout the world. True clean fog with maximum efficiency, using newest or older type insecticides (solution, emulsion, suspension) . . . one man operation. **New Starter-Generator (Optional) for immediate starts. Easily attached to new and existing TIFA units.**

Carrying Underwriters' Listing Seal MH 4162

Write for illustrated folder with details and official comments.

TODD SHIPYARDS CORPORATION
PRODUCTS DIVISION

Sales and Service Departments: Columbia and Halleck Streets, Brooklyn 31, N. Y.
Plant, Sales and Service: Green's Bayou, Houston 15, Texas
Sales and Service Agencies throughout the Western Hemisphere

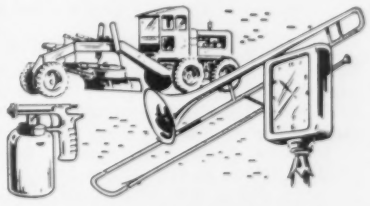
INCINERATION
WITH
Air Pollution Control
MORSE BOULGER INC.
BUILDERS OF THE MOST MODERN INCINERATOR PLANTS IN THE WORLD

FREE
Incinerator Facts
☐ Municipal Bulletin 111-C
☐ Industrial Bulletin 184-A

Contact us, or have your architect or consulting engineer tap our 70 years experience solving Waste Disposal problems—large or small. No obligation.

MORSE BOULGER INC.
80 FIFTH AVENUE, NEW YORK 11, N. Y. Dept. 24

Representatives Everywhere
Member: Incinerator Institute of America, Air Pollution Control Assoc.



SPECIAL INSURANCE FOR MUNICIPAL EQUIPMENT

It is now possible to insure municipal equipment in "All Risks" policies to afford you broader protection. Policies are available for road graders, school band instruments and uniforms, voting machines, power mowers, snow removal equipment and many other items.

Coverage includes fire, theft, windstorm, flood, earthquake and all other perils not specifically excluded. Write today for complete information.

DEPT. AC-4
ÆTNA CASUALTY AND SURETY CO.
STANDARD FIRE INSURANCE CO.
Hartford 15, Connecticut
Affiliated with Ætna Life Insurance Co.

Please send me complete information on "ALL RISKS" INSURANCE for Municipal Equipment.

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About People

The **Portland Cement Association** has merged its Highway and Municipal and Soil-Cement Bureaus into a single Paving Bureau at its general office in Chicago, Ill. Gordon K. Ray, former manager of the Highways and Municipal Bureau has been named manager of the new Paving Bureau, which will be responsible for providing engineering service and developing technical and promotional information on both concrete and soil-cement pavement.

G. K. Ray

E. L. Miller, president and chief executive officer of **The Cooper-Bessemer Corp.**, Mount Vernon, Ohio, has made known the election of Grant C. Woodward, general sales manager, and Harold C. Johnson, manager of manufacturing, as vice presidents of the company. L. L. Warriner is now chairman of the board.

E. L. Miller

The board of directors of **W. & L. E. Gurley,** Troy, N. Y., the nation's oldest manufacturer of engineering and scientific instruments have elected Robert G. Betts president. He also continues as treasurer. At the same meeting, Lester C. Higbee, who served as president for eight years, was named vice chairman of the board and was re-elected president of Precision Instruments Inc., a wholly-owned Gurley subsidiary which imports and distributes instruments of foreign manufacture.

Don L. Holmes has been appointed manager of the newly-formed Product Information Bureau of **The Flintkote Co.** He continues as advertising manager for the company's industrial products.

Edward L. Falls, Jr., has been promoted to executive assistant to the general manager of the Communication Division, **Motorola, Inc.,** according to an announcement by Arthur L. Reese, vice president and general manager of the division.

D. B. Steinman, consulting engineer, with offices at 117 Liberty St., New York 6, New York., has taken into partnership his associates R. M. Boynton, C. H. Gronquist and J. London. The firm will operate under the name of **Steinman, Boynton, Gronquist & London,** Consulting Engineers.

E. Harold Nelson has joined the Boston district office of **Sika Chemical Corp.,** Passaic, N. J., as a sales engineer. He will cover the Connecticut-Massachusetts area, calling on architects, consulting engineers, contractors and public works officials to assist them with information on using additives in concrete construction.

William H. Meyer has joined **American Air Surveys, Inc.** of Pittsburgh, Pa. as vice president. He has long been active in the field of aerial photography and photogrammetric mapping.

John S. Wadsworth, president of **Littleford Bros., Inc.,** has announced the appointment of John F. Harrison as manager of its newly created Compaction Division. Harrison will supervise the expansion of compaction equipment already manufactured by Littleford Bros., as well as develop new equipment in this field.

Harry T. Phelps has been named industrial tractor and equipment sales representative for **International Harvester Co.** He will work with the company's district offices throughout the United States in the promotion and sale of industrial tractors and equipment to national fleet accounts, railroads, airports, state governmental agencies, and other multiple users of industrial tractors and equipment.

The appointment of James Beattie, Jr., as general sales manager for **Willys Motors, Inc.** was announced by C. W. Moss, vice president in charge of sales.

W. D. Lease, executive vice president and director of Athey Products Corporation, Chicago, Ill., has been been appointed a director of the **Construction Industry Manufacturers' Association**, Chicago. He has served previously on the Membership Committee of C.I.M.A.

W. D. Lease

Word from G. J. Manahan, vice president of **The A. P. Smith Mfg. Co.,** East Orange, N. J., is that Harold M. Ferris has joined the home office sales staff. Mr. Ferris brings with him 30 years' sales, promotion and administrative experience in the water and gas industry.

H. M. Ferris

R. A. McQuade has rejoined **Simplex Valve and Meter Co.,** a division of Pfaudler Permutit Inc., as the assistant to the general Manager, J. M. Hultz. He was formerly with Simplex from 1937 to 1955 when he moved to Burgess-Manning Co., Penn Instruments Division, as sales manager.

Continuing its expansion of sales and

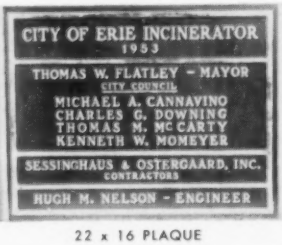
MANUFACTURERS OF PERMANENT HISTORICAL, PROFESSIONAL AND MUNICIPAL SIGNS ★ GOLF COURSE AND CEMETERY MARKERS

LAKE SHORE MARKERS INC.

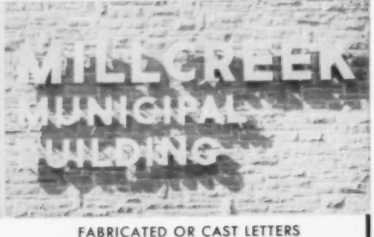
CAST Lifetime ALUMINUM

SEE YOUR JOBBER OR WRITE FOR CATALOG

LIFETIME STREET SIGNS



22 x 16 PLAQUE



FABRICATED OR CAST LETTERS

654 WEST 19TH STREET · BOX 59 · ERIE, PENNSYLVANIA U.S.A.

Most advanced of all ¾-yd. loaders! A real *production* loader, the Oliver 778 cuts time and work schedules to figures no other can match. Fully framed for strength that makes profits year after year. Torque converter automatically adjusts to the load—you get a full bucket every time!

It's quick as a flick...

REVERSE O TORC

OLIVER

SUPER-SPEED LOADERS

You'll hustle through every job with an Oliver loader—made even faster with "Reverse-O-Torc," the torque converter that saves you time and money. No shifting, no clutching—just flick the lever and you change direction forward or backward instantly. With "Reverse-O-Torc" you'll roll out more work cycles per day and wheel in more profits for yourself!

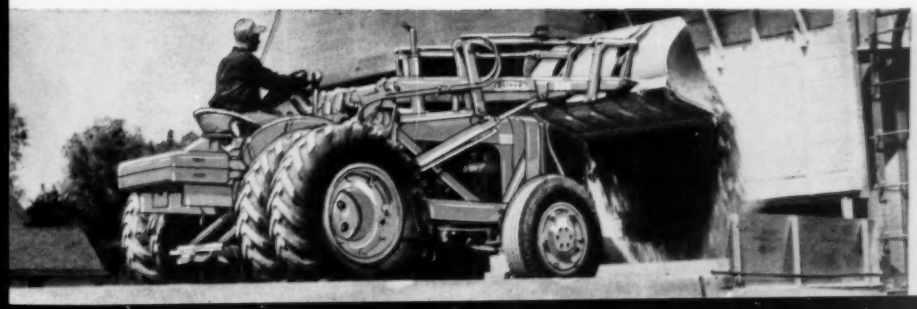
Speed-test either of these top-production Oliver loaders. Match the tractor and equipment to suit your needs and get the work package that gives you the most earning power for your money.

And check the other models in the all-purpose Oliver wheel line: the handy Oliver 550, compact-sized loader that gets in and digs where others can't go; the big-muscled Oliver Series 900's, most proved high-powered wheel tractors built!

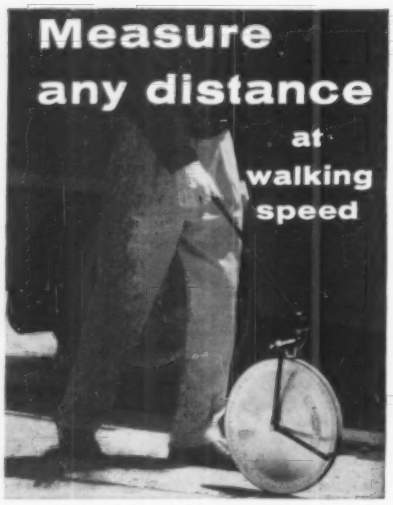
THE OLIVER CORPORATION

Dept. 2232, 400 W. Madison St., Chicago 6, Illinois

LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS



Fastest loader in the 1-yd. class! That's the Oliver 888! Powerful hydraulics provide maximum down pressure and deep penetration. Add "Reverse-O-Torc" and you have an unbeatable money-making combination. Engine torque is multiplied more than twice over—you're always in the right gear ratio for your work.



records 100,000 ft.
automatically!

It's So Easy to measure with a Rolatape ...and you save time on every estimating job...no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

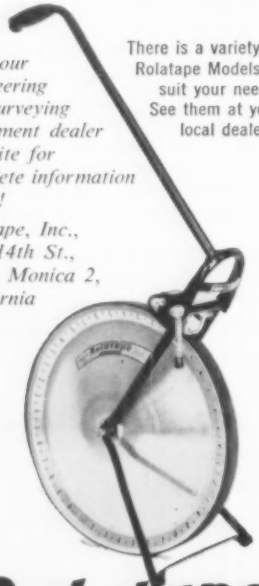
Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.



Rolatape
Measuring Wheels

About People

(Continued from page 230)

engineering personnel, the **Hersey-Sparling Meter Co.,** recently announced the addition of three more sales engineers: R. B. "Pat" Patrick, who will operate from the Dallas office; Harold Zenders, who will serve the territory covered by the firm's Cleveland office, and Roy Vorlick, who will augment the staff at the West Coast office in El Monte, Calif.

W. Talmadge

William (Bill) Talmadge has been named general sales manager of the Everett Trencher Division of **Earth Equipment Corp.,** Los Angeles 21, Calif. Fritz von Schlegell, Jr., company president, states that Mr. Talmadge's appointment is the first step in an over-all program of expanding the distribution of Everett Trenchers, nationally and internationally.

D. D. Ackerman

David D. Ackerman has joined **Hays Manufacturing Co.,** Erie, Pa., as salesman for the New York Metropolitan Area, including adjacent New Jersey, Long Island and the southern tip of Connecticut, according to word from J. B. Cook, Jr., sales manager of the General Products Division.

J. A. Cobb

The appointment of John A. Cobb as field engineer to work with the "Michigan" line of construction and heavy materials handling equipment has been announced by A. E York, sales manager of the Construction Equipment Division, **Clark Equipment Co.,** Benton Harbor, Mich.

As a traffic engineer for **Traffic Signals Inc.** of Shreveport, La., Joe Burleson's responsibilities will include contact with representatives of the state and local municipalities, and conducting seminars in conjunction with state and municipal officials. He was formerly traffic engineer for the City of Council Bluffs, Ia.

George D. Grogan is now general manager of the Industrial Chemicals Division of **Pennsalt Chemicals Corp.** He succeeds George R. Lawson, recently named general manager of the Chemical Specialties Division. Other appointments in the Industrial Chemicals Division are those of W. G. Kayser, Jr., as sales manager of organic chemicals, a newly created post; Arthur F. Bixby as manager of sales for the division, and Melbourne P. Binns as product manager.

Edwin J. Titsworth is now manager of Building Material Sales and William W. Hoover, assistant to the manager, Road Materials Sales (succeeding Mr. Titsworth) at Tar Products Division, **Koppers Co., Inc,** Pittsburgh, Pa.

CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. South, New York 16, N. Y.

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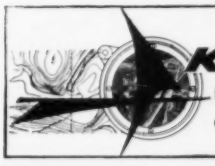

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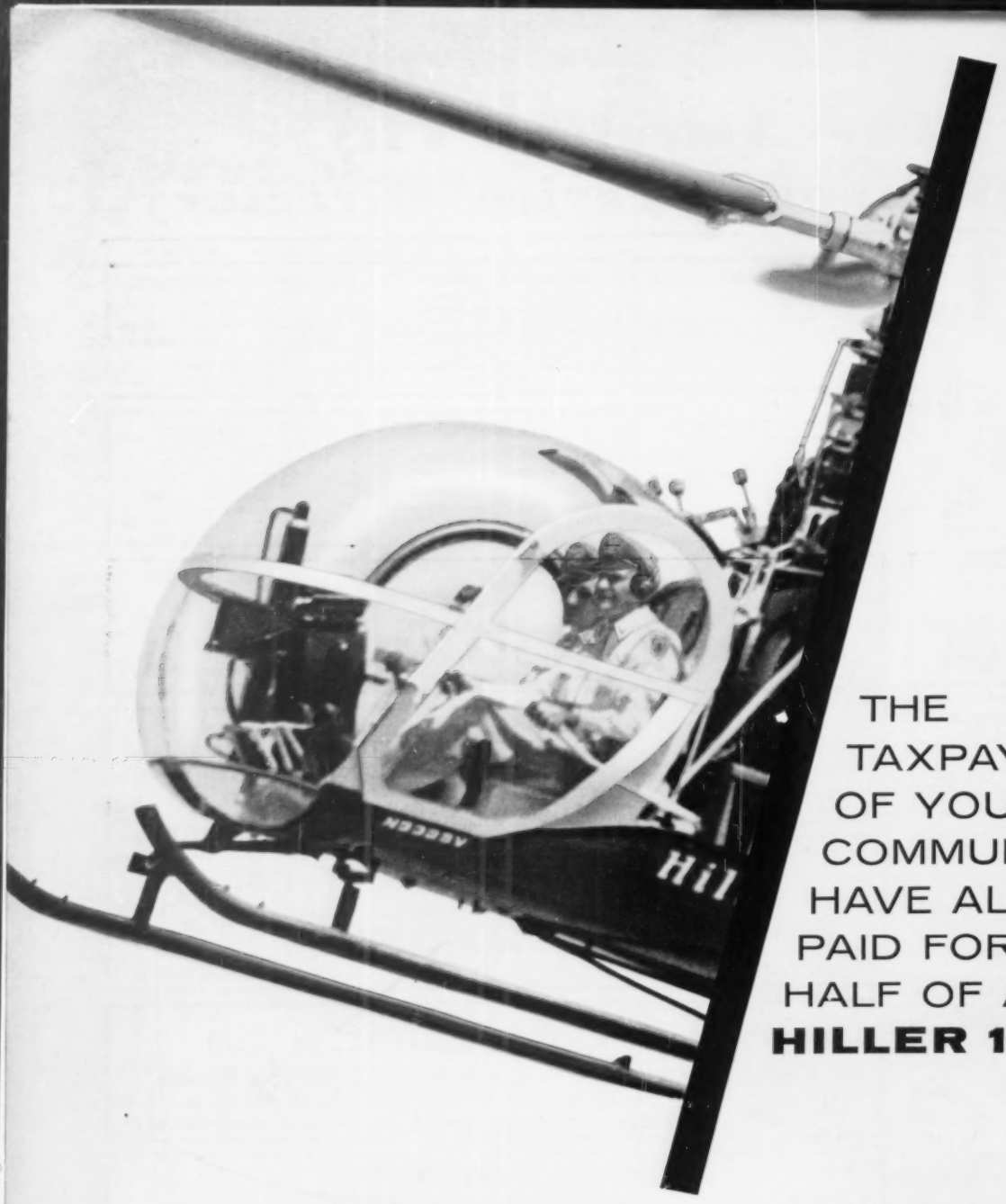

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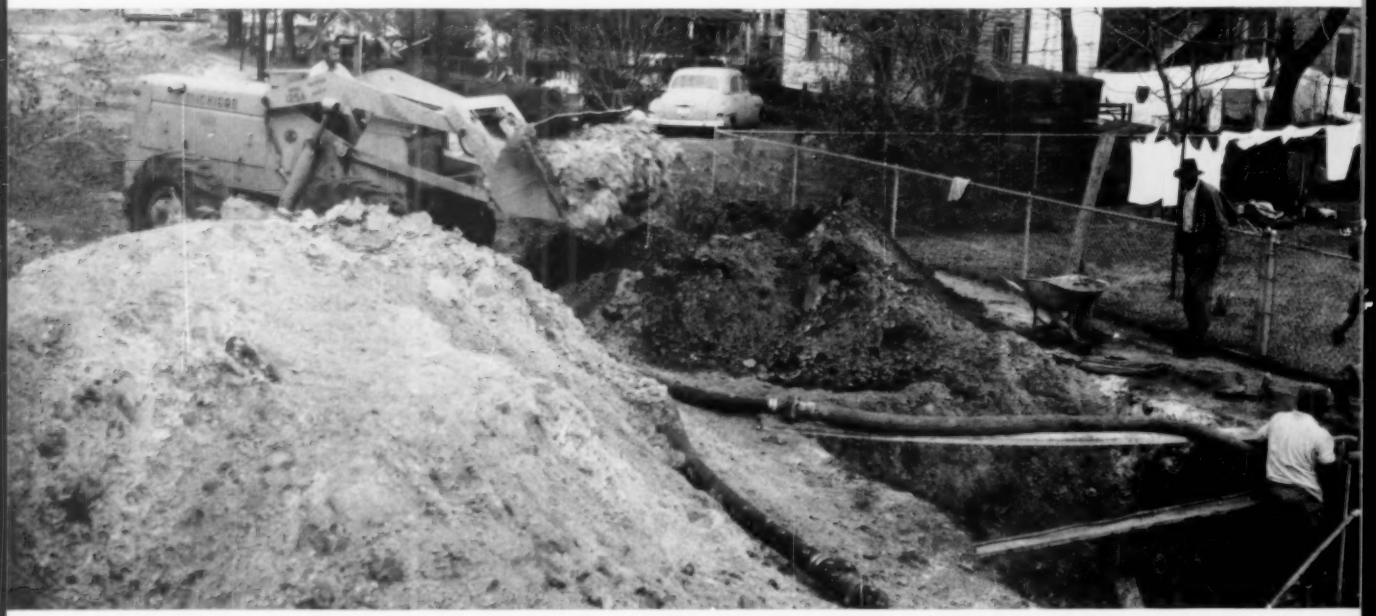

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